THE LANCET.

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The Huxley Lecture

ON

RECENT ADVANCES IN SCIENCE AND THEIR BEARING ON MEDICINE AND SURGERY.

MALARIA AND THE TRANSMISSION OF DISEASES.

Delivered at Charing Cross Hospital on Nov. 2nd, 1914,

BY SIR RONALD ROSS, K.C.B., F.R.S., M.D., F.R.C.S., D.Sc., LL.D., D.P.H.

MR. CHAIRMAN, LADIES, AND GENTLEMEN,—I can imagine nothing that would have delighted Huxley more than the bearing of recent advances in science on the medicine of the tropics. Indeed, this latest victory of science, achieved after his time, may be considered as a culminating point in the practical application of science to the needs of suffering humanity. The victory has been won, not only by medicine, but by medicine and zoology fighting side by side—by those two great branches of science in which he himself was so proficient. Let me now describe the details of the campaign.

THE TRANSMISSION OF DISEASE.

It is curious that though the transmission of disease is a matter of such vast import to every one of us, it has received so little investigation in the past. Even up to the middle of last century our inquiries had led us little further than what I call the subscience of the subject—that is, we distinguished, classified, and named our various bodily inflictions. We also did more: for we had ascertained empirically the physiological and therapeutical effect of many drugs—quinine, opium, mercury, iodide of potassium, ipecacuanha, and others; and also that great genius Jenner had discovered a wonderful fact which is at the basis of the theory of immunity, prevention, and cure. But the causes of disease and their mode of transference still remained hidden. At that epoch, however, and afterwards Pasteur, Koch, Lister, Behring and others created the science of bacteriology. But still, though the information thus obtained was of prime importance to the pathologist, the physician, and the surgeon, we still remained much in the dark regarding one important issue, namely the exact path of transmission of many diseases from man to man. Bacteria are easily saprophytic and may have many paths of transmission, and I fear that we are still very much in doubt as to the most important of these numerous routes. We thought, and are often still inclined to think, that the germs of disease come to us from any place where they may be scattered—that they have not precise routes and points of entry. This leads to a very vague prophylaxis. We undertake all kinds of disinfections in order to destroy the enemy wherever he may possibly lurk; and the consequence is that we often fail to check infection as certainly as we wish. It has been the great result of the inquiries which I will now proceed to describe that they have, as the French say, "precised" our knowledge upon this point in connexion with many diseases, and have indeed led to the discovery of another and most wonderful route of infection which until recently was undreamed of by the profession and the public.

The armies of science, like those of nations, commence with small beginnings and advance in parallel columns. If one column is checked by insuperable difficulties, the others endeavour to outflank the point of resistance; and a victory is often won by this means in science as in war. (Excuse my military similes, which appear to be appropriate at this hour.) That column of science which conquered the domain of bacteriology was brought to a standstill for some time as regards the exact transmission of disease until the parallel column attacking from quite a different direction circumvented the difficulty in this respect.

The Story of the Early Investigations.

The story commences with the studies of those obscure and often despised workers who toiled in the domains of parasitology. Some of the largest parasites were known in antiquity, but the ancients possessed quite a wrong notion of their origin, which they attributed to spontaneous generation—that is, they thought the parasites originate *de novo* in the host. In the seventeenth century, however, Redi proved that this hypothesis does not hold for certain insects; and later Pallas argued that parasites originate *ab ovo*, like other animals—that is, that their eggs escape from one host and enter another host, thus leading directly to the presence of the parasites in the latter. This history possibly still holds for certain parasites; but in 1790 Abildgaard showed by experiments that some parasites of fish live not only in those fish but for a part of their existence in certain water fowl; and this extraordinary law, which may be called after De Barry's term slightly changed, the law of metaxeny, was proved during the middle of last century by Eschricht, Steenstrup and especially Küchenmeister to apply to a large number of Platodes and Cestodes. Subsequently Leuckart, Melnikoff, and others extended the law to cover other species, including species of Nematodes. A most important case was that of the *Filaria medinensis*, the famous guinea worm of man, which was shown by Fedschenko in 1869, following a suggestion of Leuckart, to be in common with man and a water-flea (*Cyclops*). All this constituted a discovery which was both remarkable in that it exhibited the wonderful devices of nature for propagating parasites from host to host, and was also of the highest importance to mankind (though few recognised this point at the time) because it showed us how many of our great diseases are likely to be acquired.

Let me dwell on this point for a moment. Parasites, accustomed as they are to dwell in the safe retreats of certain portions of their host's body, must be exposed to great dangers whenever they come to pass, as they must do, from one individual host to another. Thus if this passage is effected merely by the egg, it is obvious that the eggs must be poured out in immense numbers to compensate for their immense destruction outside the body of the host, while it would always be probable that only a very minute proportion of the eggs would ever find their way again into fresh hosts of the proper species. In order to avoid these difficulties, nature, I presume through an infinite period of evolution, has enabled many parasites to acquire a more safe and certain route of entry—through other animals which are associated frequently with their first species of host. Thus, for instance, a parasite of dogs and cats develops also in the dog-louse, and is therefore not scattered broadcast from the dog and the cat over the surface of the earth, but is retained alive in close proximity to the

bodies of those animals. Remember that nature is as solicitous for parasites as for the higher animals which contain them. She thinks no more of man than of the minute germ which infests him. From her open hand fall innumerable species, and she endows them all with equal powers of looking after themselves and their own interests. It is not in the interest of parasites to be wasted abroad. It is in their interest to be brought again as quickly as possible to the host in which evolution has formed them to live—and that is why this wonderful law of metaxeny holds good. It must be remembered, of course, that no species of parasite should be allowed to develop in excessive numbers in the same individual host, because this would result in the death of the latter and therefore also of the former. The parasite must therefore find some means of transference at some stage in its life-history; and that route must be the most expeditious possible. This most expeditious route will often be, as I have said, through another species of animal connected in its habits with the original host.

Later Discoveries.

Following upon the discovery of Fedschenko, Manson in 1877 showed that the embryos of another *Filaria* of man (*Filaria bancrofti*) develop in a species of mosquito, probably a *Culex*. The life-cycle of this parasite, up to the point to which he carried it, was closely similar to that demonstrated by Fedschenko for *Filaria medinensis*; and Manson did not complete the story. Now, however, other important discoveries were made, which showed that animal parasites do not by any means belong only to the zoological groups of the Cestodes, Platodes, and Nematodes, but that many of them are unicellular. Thus Leuckart established the protozoal order of the Sporozoa; Lankester and others discovered Trypanosomes and Hæmogregarines; Davaine discovered Cercomonads, and Lösch discovered the group of parasitic amœbæ. Lastly, in 1880, Laveran made the most important discovery that malaria is associated with a minute protozoal parasite of the blood; and his observations were followed by those of Danilewski and others who showed that similar parasites are to be found in many animals. All this extended the catalogue of animal parasites over a vastly larger field than was known to the ancients; and the morphology and life-history of the parasites in the known hosts were elaborated by numbers of workers, who also succeeded gradually in connecting them with some of the most important diseases which inflict man and animals. Thus it was gradually shown that amœbæ are the cause of one form of dysentery and abscess of the liver; that trypanosomes cause the deadly nagana of domestic animals in Africa, and the equally deadly sleeping sickness of man, besides many other maladies of animals of numbers of species. Ankylostomes were proved to cause miner's anæmia, which also was shown to be prevalent through vast areas of the tropics, by no means only among miners. The Trematodes called *Bilharzia* were shown to produce a terrible form of cystitis in Egypt and elsewhere. *Filaria bancrofti* were proved to produce elephantiasis and a number of other maladies which are very common in the tropics. Simultaneously malaria was seen to be caused by at least three different species of the group discovered by Laveran.

At the same time, of course, as I have said, the habits of all these parasites in the hosts in which they had been found were being minutely examined. But up to the last decade of last century we still could form scarcely any definite idea as to how the protozoal parasites pass from one individual host to another. The law of metaxeny which had been proved to apply to many of the larger parasites had not been extended to the smaller ones. In 1889, however, Smith and Kilborne discovered a small parasite called *Piroplasma*, in the blood of cattle suffering from Texas fever; and more than that showed that in some mysterious way the infection is carried from ox to ox by means of certain cattle-ticks—though they did not demonstrate in any way that these parasites undergo a metaxenous stage of development in the ticks, and indeed failed to find them at all in these arthropods. In 1896 also Bruce made his famous discovery that the Trypanosomes of nagana are conveyed by certain tsetse flies, but supposed that the carriage is a mechanical one. And there the matter rested until the solution of the great malaria problem opened a new field.

MALARIA.

We now turn to the subject of malaria. Economically, as well as medically, it is certainly the most important disease in the tropics, perhaps in the world. It is found almost everywhere in hot climates, and even in most temperate climates during the summer. From statistics we find that as a broad general rule in malarious countries about one-third of the total population suffer from attacks every year, and also that about one-third of the admissions to hospital and attendances at dispensaries are due to malaria. But these figures are merely based upon records and do not cover the enormous additional number of patients who remain untreated. Thus we know that the malaria parasites or malarial enlargement of the spleen can be found in native children in malarious countries to an enormous extent, reaching 100 per cent. in very insalubrious spots. The case mortality is only about 0·5 per cent., but the prevalence of the disease is so extremely great that the total mortality caused by it makes an addition to the general mortality of anything up to 10 per 1000 or even 15 per 1000; and the malady complicates all other diseases in the tropics in a way which renders them more difficult to treat. In India alone it has been officially estimated that the total deaths from malaria average about 1,300,000 a year in ordinary years, and may reach a much higher figure during years of epidemic prevalence. Thus the total bill of annual mortality and sickness which King Malaria presents to the human race is something enormous.

Former Hypotheses regarding Malaria.

Hence the development of the human race, especially in warm countries, has long demanded that we should ascertain exactly how this plague is propagated, and should endeavour to find how best it may be prevented. It is remarkable that even more than 500 years before Christ the ancients certainly were acquainted with one great law—namely, that malaria is connected with stagnant water, such as marshes; and there are good grounds for believing that Empedocles of Sicily actually delivered Selinus from malaria by draining its marshes or by turning two rivers into them. This knowledge seems to have been generally held since ancient times, though it must have been acquired quite empirically; but Varro and Columella, at

about the time of the Christian era, actually suggested that the disease is in some way connected with insects which breed in marshes. In more modern times, however, malaria has been ascribed to noxious vapours given off by stagnant collections of water—the hypothesis evidently being that the poison is some kind of chemical one. I have mentioned that in 1880 Laveran discovered that the disease is due to certain protozoal parasites in the blood. When this fact was accepted ten years later, many observers at once rushed to the conclusion that these parasites have an extra-corporeal existence in marsh water, and actually attempted to demonstrate this by producing infection in healthy persons by such water brought from malarious localities. The experiments of Agenore Zeri (1890) are to be particularly mentioned. He gave water from the Pontine marshes persistently to a number of persons orally or in spray or by clyster, but entirely without result. At the same time many thought that the poison may lie, not only in stagnant water, but generally in the soil of warm countries, this being called the hypothesis of the telluric miasma; but of course this was merely a hypothesis which did not rest upon any observations or experiments. Even ten years after Laveran's discovery we were still completely ignorant as to how the malaria parasites enter the body. We might search for them in marshes and soil; but the search was likely to prove extremely difficult, because all water and soil is full of innumerable different organisms, and it would have been no light task to ascertain which of all these are really responsible for the disease among men, especially since Zeri had shown how difficult it was to produce infection by means of water in bulk.

At the same time however, the hypothesis originally but vaguely mooted by Varro and Columella had been gaining ground. Indeed, Lancisi had repeated the same speculation in 1717 and seems actually to have suspected mosquitoes and to have studied them. As late as 1881 several theorists repeated this conception—though, on studying their statements, I think that little value is to be attached to them. In 1883, however, Dr. A. F. A. King wrote a most able paper on the subject, in which he gives no less than 19 reasons why mosquitoes are likely to carry malaria. He thought that the insects bring the poison from the marsh and inoculate it into men. Many of his reasons are good ones, but others are now seen to have been untenable—and, in any case, he gave no experimental evidence. Next year Laveran himself and Robert Koch independently enunciated the same speculation, but gave few reasons and no experiments in support of it. Ten years later, however, Manson repeated the hypothesis, but in a different form. He depended less upon the epidemiological evidence cited by King than upon certain parasitological evidence which occurred to himself. By this time (1894) the parasites of malaria had been very carefully studied, and were shown to possess, not only certain forms which are provided for their propagation in the human host, but also other forms which, when the blood is freshly drawn, emit several so-called flagella. These latter forms had really led Laveran to his discovery, but their zoological significance still remained quite unexplained; and while some writers thought that they had some special significance, others believed them to be merely the result of death *in vitro*. Manson now urged that the flagella given off from these forms are really flagellated spores; that when mosquitoes ingest blood containing these forms the flagellated spores escape in the insect and enter its tissues, where they ripen into some further unknown stage. Then, he thought, the insect dies two or three days later on the surface of the water, and this later stage of the parasites enters the water, and finally rises in the marsh-mist to infect men. Obviously, therefore, Manson's hypothesis was quite different from King's: the former thought that mosquitoes derived the parasite from men and transferred it to the marsh, while King thought just the opposite. Neither really reached the truth: both were half right, but half wrong. One cited parasitological and the other epidemiological evidence; and neither attempted experimental verifications.

The Solution of the Problem.

Nevertheless, all these hypotheses, including those of the telluric miasma, were necessary for the laborious experimental inquiry which was now evidently demanded in the supreme interests of human life and health. I gather from what I have been told that my own work on the subject may prove sufficiently interesting to students to be worthy of mention here. I was first drawn to the malaria problem in the year 1889, when I observed during active service in Burma that the prevalence of malaria did not at all accord with the theory of the telluric and marsh miasma; and my doubts were strengthened during subsequent years by careful thought and study. If the poison is given off in an aerial form, either from water or from soil, the disease ought to be almost uniformly distributed. Such, however, is not the case, and it really occurs principally in very small spots or pockets, generally in close proximity to stagnant water. Thus in one station where I subsequently served my regiment was severely inflicted, while other regiments, scarcely a mile distant, remained almost entirely free. I was therefore very dissatisfied with this hypothesis, and being acutely alive to the great importance of the problem I determined to study it carefully. In 1894 Manson acquainted me with his hypothesis, and I then remembered that Laveran had said the same thing; but I was not aware of King's paper, nor of the remarkable researches on *Piroplasma* by Smith and Kilborne. In 1895 I attacked the work experimentally at Secunderabad in India, and determined first to adopt the mosquito speculation as a working hypothesis, and then to study other hypotheses if it failed—though I was much impressed by the former. The whole history of my work has been fully given in my Nobel Lecture, published in England by the Journal of the Royal Army Medical Corps, 1905; and I need mention here only the salient points.

For more than two years I caused mosquitoes of the genera *Culex* and *Stegomyia* to feed on patients containing malaria "crescents" which were the proper forms for transmission according to Manson. But my failure was complete, and indeed it was impossible to follow what he thought were flagellated spores in the insects' tissues. I then adopted another technique; which was to compare insects of the same species which had been fed on malarial blood with those which had not been so fed, and to see if I could find any particular parasites in the former after they had been kept alive for some days. Many hundreds of insects were studied completely in this manner,

and more than a thousand incompletely; but my failure was still complete. I obtained, however, a close practical experience of the insects' tissues, and learnt much about some common parasites which they possess. I also endeavoured to infect healthy persons by means of water in which presumably infected mosquitoes had been allowed to die, as Manson thought that such water would be infected; and, lastly, I worked at a hypothesis of mine, that infected mosquitoes might carry infection by their bites, and Mr. Appia, assistant surgeon of my hospital at Bangalore, kindly submitted to be bitten by many such insects in 1896. The result still remained quite negative. We now know the reason: the species of insect with which I was working were the wrong ones.

In 1907, however, I observed another variety, which I called dappled winged mosquitoes, and which everyone now knows were Anophelines. I first saw these in an intensely malarious quarter near Ootacamund, where I myself acquired malaria during my investigations. A few months later I obtained eight of these insects in Secunderabad, and employed them for my usual experiments. Six of them died or gave bad dissections. On August 20th, 1897, I was so fortunate as to find in the tissues of one of these insects, four days after it had been fed upon a case of malaria, certain bodies which I had never observed in mosquitoes before. These contained the characteristic pigment of the malaria parasite. Next day, the 21st, I found the same bodies in the last mosquito of my batch of eight—only they were now larger and more definite. To those who had not worked at the subject such evidence might appear slight indeed; to me, after years of toil and thought, the evidence was immensely strong. A little later I found the same bodies in two more mosquitoes and knew that I was on the right track: I felt that the two unknown quantities of this complex equation had been simultaneously found—the species of mosquito which carries malaria, and the position which the parasites take in its tissues, namely, the wall of the intestine.

Elucidation of Life-Cycle of Malaria Parasites.

Now, after 17 years, I may perhaps be allowed to mention this point in order to encourage those students who, as I was then, are now toiling after the unknown. But I at least obtained success, not only by labour but also by supreme good fortune; and believe that but for this good fortune on those dates, we should still have remained ignorant of the manner in which malaria is conveyed, and might have remained ignorant of it for the next century. Unfortunately, my work was now interrupted for nearly six months, just at a point when I expected to unravel the whole history of the malaria parasites in a few weeks; and it was not until March of next year that I was able to take up the thread again in Calcutta. For many reasons I was then unable to work at the human parasites, but commenced the study of the malaria parasites of birds, which are closely similar to the former. In a very short time I was able to demonstrate the presence in mosquitoes of pigmented bodies derived from the allied parasites. These bodies were found to grow regularly during one week after the insects had been fed; to reach maturity, and to produce a number of elongated spores. Now came an intensely exciting moment. What happens to these spores? According to Manson's hypothesis, they ought to liberate themselves in the water in which the insects died; but I had now shown that the insects did not die after two or three days as he supposed, but may live for weeks. I attempted to follow the spores in all directions through the insects' tissues, into the lower intestine, and even into the egg. On July 4th, 1898, however, I observed the fact that the spores enter the insects' salivary or poison glands. The full truth was now immediately disclosed, and proved to be far more wonderful than any of us had ever dreamed of. The parasites are not only taken from man by the mosquitoes as Manson had supposed and are not only put into man by the mosquitoes as King had supposed; but both hypotheses are true, and the insect carries the parasites directly from man to man. Here then was merely another case of the great law of metaxeny—which, however, was now proved for the first time to hold good for protozoal parasites. The malaria parasites, like many larger ones, require two hosts for their life-cycle.

These researches mapped out step by step every detail of the transformation, and gave us a much greater logical certainty than could be obtained by isolated infection experiments. Nevertheless, such experiments were attempted immediately, and in July and August I infected 22 out of 28 healthy birds by the means of the bites of infected *Culex*—thus completing the whole story in detail. True, that was done with birds' malaria, and I had only seen the first steps of the process with regard to human malaria; but any zoologist will know that with such closely allied species the life-cycle of one is sure to be almost exactly similar to the life-cycle of the other—as proved to be the case here. My work was now interrupted again, and for nearly a whole year; and it was not until August, 1899, that I was able to show directly that the human parasites have exactly the same development. Meantime, however, Koch and Daniels had confirmed my work on birds' malaria; and certain Italian workers repeated it with regard to the human parasites, even to causing infection in healthy human beings (November, 1898), three months after my similar work with birds.

A very important discovery had been meantime made quite independently by MacCallum and Opie in America (1897) who showed that the bodies which Manson had thought were flagellated spores were really sperms. Thus the large pigmented cells which I had found in mosquitoes at the same date were really fertilised macrogametes. This gave a much more correct zoological interpretation to my phenomena; but did not otherwise disturb the history which I had ascertained.

SUMMARY OF RESULTS IN REGARD TO MALARIA.

This, then, was the result obtained. Let me summarise it briefly. From the time of the Romans we were aware that the malarial fevers are connected with marshes and stagnant water in warm countries. Later, when it was seen that the disease is not confined only to the proximity of marshes, the theorists conceived that there is a telluric poison which causes malaria and is especially abundant in damp places. All this was a very general proposition; and in order to prevent the disease, it was necessary to undertake very extensive drainage. Now, however, the new knowledge obtained enables us to particularise the exact route of infection. We believe no longer that the poison is spread uniformly in the air of warm countries, but know that it is always contained in

the minute bodies of certain insects, and, more than that, in the still more minute salivary glands of those creatures. Here, then, science has given us knowledge which can not fail to be of immense practical importance to the world.

The discovery of the full life-cycle of the parasites enables us, not only to "precise" the route of infection, but to determine exactly which species of mosquitoes are concerned. My failures with numerous undetermined species of the genera *Culex* and *Stegomyia* had shown that these are probably innocuous as regards malaria; and my ultimate success with certain Anophelines had shown that these were inculpated. Since then the work of many observers has shown that out of about 500 Culicidæ only about 25 species carry malaria, and that all of these belong to the Anophelines. So that for the prevention of malaria we are not obliged to deal with mosquitoes in general, but only with particular species.

Still further, the knowledge so obtained enables us to study exactly the habits of the culpable species. In fact, I necessarily began such studies during the whole of my researches. The genera *Culex* and *Stegomyia* breed most commonly in artificial collections of water round houses; but I saw as early as 1897 that the dappled-winged mosquitoes (Anophelines) breed principally in different sites, that is, chiefly in natural collections of water, such as marshes, puddles, streamlets, and the edges of lakes, ponds, and rivers. This had been known before in the case of certain species; but I now saw the great epidemiological and sanitary bearing of the phenomenon. The reason why malaria is connected with marshes was now fully established by quite independent work. Humanity had explained the fact by supposing that the poison of malaria itself rises from the marsh; it was now seen that it is not the poison itself that rises from the marsh but the carrier of the poison. The net result was the same—except that we now know not only the source of the poison but the exact method of transference. After all, humanity had reached the truth by empirical observations made during thousands of years; but now science, in confirming these observations, brought them to a fine point of exact theory.

Advances in Other Directions.

But these were by no means the only fruits obtained. To return to our military parallel, when a commanding position of the enemy is carried victory extends to a large area round it. The principal function of men of science is not merely to observe, describe, and catalogue phenomena, but, above all, to solve difficult problems; and the solution of one such problem frequently gives us the solution of many more. Such has proved to be true also in this case; for as soon as we had solved the malaria problem we were able to apply the same theorem to a number of other diseases. As already stated, Manson had shown in 1877 that the embryos of *Filaria bancrofti* can live in certain species of *Culex*, but he had not shown how they pass back from these insects to man. Now, however, James and Low, working independently, showed that the embryos enter the insects' proboscis, thus suggesting that they return into the human circulation by a route similar to that which is used by the parasites of malaria—and this work has been well followed up by Bahr and many others.

Another discovery, concerned with one of the most important of human diseases—namely, yellow fever, was made by Reed, Carroll, Lazear, and Agramonte during the last days of last century. Without knowing the causative agent of that disease, they yet showed by direct experiments on human beings that the infection is carried directly from man to man by another species of mosquito, *Stegomyia fasciata* or *calopus*. It had long been stated by epidemiologists that malaria differs from yellow fever in that the former is connected with damp and decaying vegetation and the latter with insanitary conditions round houses. The former hypothesis was verified by the observation that Anophelines breed in terrestrial waters, and the latter was now explained by the fact that Stegomyia breed in artificial collections of water round houses. A little later Graham gave strong evidence in favour of the theory that dengue fever is carried by a species of *Culex*. Thus mosquitoes have now been incriminated as the carrying agents of no less than four important diseases of man. But this is by no means all. I have mentioned that Bruce incriminated *Glossina morsitans* as the carrying agent of nagana; and he and others now showed that the deadly sleeping sickness of Africa is carried by other tsetse flies. Various Spirochætes, especially that of tick fever, have been shown to be conveyed by ticks. A peculiar type of comparatively mild fever, of which the cause, like that of yellow fever, is still unknown, has been proved to be conveyed by sand flies. Several diseases of animals have been proved to possess a similar history; and others, both of animals and men, are suspected to lie in the same category. Perhaps, however, the most important and dramatic result was that obtained in the case of plague—the most terrible of epidemic diseases, the wonder and the despair of humanity since the beginnings of history, the scourge which was so often attributed to the direct action of God. It is caused really by the rat-flea. And this discovery signals another advance, because plague is, as we all know, due not to an animal but to a vegetable parasite; and we therefore see that bacteria also may adopt precise routes of entry. A similar case is that of Mediterranean fever, which is carried principally by the milk of infected goats; and leprosy (another supposed scourge of Heaven) has been attributed to the bites of bed-bugs; while some are even beginning to think that measles is due to fleas.

Concluding Remarks.

Gentlemen, I have now completed my task. We have seen at least another instance of how strongly recent advances in science bear upon medicine—how they confirm facts previously guessed at, achieve victories formerly undreamed of, and establish great theorems which will be of value to humanity as long as civilisation exists. But they affect not only the theory and the treatment of disease, but, what is perhaps still more important, its prevention; and it is especially in this line that the new theorems affect us. A whole great epidemiological group of diseases has been separated out—the so-called insect-borne diseases—and they are perhaps on the whole the most important, at least in the tropics. But, more than that, these discoveries give us practical methods of prevention, which may be summed up in two words—No vermin. We now have a great sanitary ideal put before us—so to manage our habitations, villages, towns, and cities that the vermin in them shall be reduced to the lowest possible figure. Scores of entomologists and medical men are now dealing exactly with the habits of these creatures and showing us how to effect the required object. It demands only

intelligence, energy, and organisation on the part of administrators. Unfortunately these qualities are not always forthcoming, and administration often lags years behind the dictates of science. Although 15 years have elapsed since many of the facts which I have described were discovered, I think that I may say after constant study of the subject and with all due consideration that mankind has hitherto not effected more than about one-tenth of the improvement of health which it might have effected already if it had put its heart into the business. When I had completed my work in 1899 I had fondly dreamed that a few years would see the almost complete banishment of malaria from the principal towns and cities in the tropics—that those benign climates and those beautiful scenes would be almost rid at once of a scourge which had blighted them from time immemorial. In this I have been disappointed. True, much has been done in certain places, as in Panama, Ismailia, Italy, West Africa, and parts of India and the Malay States, and in some other spots; but much more might have been done had we remained fully alive to our opportunities—and our duties. It is not the fault of science that we do not fully utilise the gifts which she gives to us. None of us here will live to see the full fruition of these gifts in this particular case; but we have at least seen the beginning and may believe that our children will reap the profit.

But it is ever thus with science. Her slaves are like labourers condemned to drive tunnels through mountains—working, perhaps for years, in darkness and oppressed by the immense spissitudes of nature above them, but always encouraged by the hope that at any moment they may emerge into the sunlight and upon the vision of a new world. May I conclude, as appropriate to the subject of this address, with four lines which were written years ago by one who was then toiling at the researches here described and in the darkness of the most utter failure—at work, moreover, for which he had little liking or ambition. They may encourage others who are now in a like case. Writing generally of the sublime spirit of inquiry he said:—

> Thee most we honour, thee
> Great Science. Hold thy way.
> The end thou canst not see;
> *But in the end, the day.*

CENTRAL MIDWIVES BOARD.—A special meeting of the Central Midwives Board was held at Caxton House, Westminster, on Oct. 22nd, Sir Francis H. Champneys being in the chair. A number of midwives were struck off the roll, the following charges amongst others having been brought forward. The patient suffering from attacks of faintness, from rupture of the perineum, and the placenta and membranes not having been expelled within two hours of the confinement, the midwife did not explain that the case was one in which the attendance of a registered medical practitioner was required, nor did she hand to the husband or the nearest relative or friend present the form of sending for medical help, properly filled up and signed by her, in order that this might be immediately forwarded to the medical practitioner, as required by Rule E. 19. The midwife being unable to make use of a clinical thermometer or to take the pulse of her patients, consequently cannot comply with Rule E. 13. Neglect to employ the antiseptic precautions required by Rules E. 3 and 7, to wash the patient as required by Rule E. 7, and neglect to take the pulse or temperature of the patient as required by Rule E. 13. Discontinuing attendance at a time when the patient was ill and suffering. Not being scrupulously clean in person, clothing, house, and appliances as required by Rule E. 1; not keeping the register of cases as required by Rule E. 23. Medical aid having been sought for the patient, the midwife neglected to send any notification thereof to the local supervising authority, as required by Rule E. 21 (1) (a).

THE WOUNDED IN THE WAR: SOME SURGICAL LESSONS.

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IT is still too early to generalise upon the surgical methods needed by those wounded in the present war. It may, however, prove useful to present a few of the results which have been observed in a base hospital in London. As might have been expected, the final results of wounds were seen before the earlier ones, because at first the injured remained in the stationary hospitals until they were well enough to travel. Now that these hospitals are full, and the fighting is often nearer England than the Allies' bases, the type of wound is becoming more serious. Taking the cases in this reverse order, then, we learnt at first that bullets, and even pieces of shrapnel casing, often passed through fleshy parts without doing much damage. The points of entry and of exit were clearly seen. Both had healed satisfactorily, and nothing remained to be done except to feed and nurse the patient for a few days before he was discharged into a convalescent home. In other cases the wounds of entry and exit were suppurating, but the track which must have existed between the two was soundly healed. No sinus remained, and so far it has not been necessary to lay open any such track. It seems clear, therefore, that the most frequent sources of infection are the skin of the patient or some subsequent contamination. It is certainly not due to the clothing, for in several cases pieces of shirt or puttee were removed from wounds which had healed soundly and which had been reopened on account of the pain they had caused. The positions of the wounds of entrance and exit showed in many cases that the path taken by the projectile had been extraordinarily devious, and that the deviation was not accounted for by the presence of any more resistant structure such as bone.

Cases with Foreign Bodies in situ.

The wounds which were still open when the patient reached England were all submitted to radiographic examination on the assumption that the foreign body causing them was *in situ*, and in the majority of cases this was found to be correct. It was soon learnt, however, that there was a vast difference between the location of the projectile and its removal. The radiograph showed its presence, but it was often extremely difficult and might be impossible to find it. The patient, therefore, was told that the wound would be explored, not that the projectile would be extracted. The difficulty lies in the fact that the patients are strong muscular men, and that the shadow only gives an approximate idea of the position and depth of the projectile. It is of the utmost importance therefore that the apparatus as well as the X ray operator should be of first-rate quality. Very little constitutional disturbance was produced, even when the projectile had been in position for three or four weeks, and there was none of the tracking or burrowing of suppurating sinuses which might have been expected. Pieces of the clothing, either in shreds or torn into filaments, were found distally in nearly every case. They had to be looked for, as they were often separated by a bridge of healthy tissue. In some cases where the skiagram showed that

the bullet had been extensively comminuted and numerous fragments were distributed widely in the tissues it was thought better to leave them untouched if they were not causing any trouble. In like manner no extensive operations were undertaken to remove foreign bodies from the chest. By the time the patients arrived in England the wounds had healed—apparently without suppuration. When one side of the chest contained fluid it was treated as an empyema by drawing off the blood-stained serous exudation, a portion of rib being removed and drainage employed if the temperature rose or the pleural cavity refilled. It was noticed that most of the operations undertaken for the removal of bullets suppurated for a few days but never dangerously. The operations were performed with the usual precautions and were nursed in the wards by fully trained hospital nurses, so that the suppuration was not attributable to any failure of surgical or nursing technique. It was soon considered advisable, therefore, to isolate patients requiring such "clean" operations as removal of torn internal semilunar cartilages and after this precaution these cases uniformly did well. Amputations at this period were rare and there were no deaths.

Severer Cases.—"Nerve Concussion."

The cases have become more severe as the battles were fought nearer England. Gangrene due to an anaerobic organism has occurred in several cases. Early operation has been performed with success, and the very great value of a free application of a 2½ to 3 per cent. solution of iodine in rectified spirit has been determined. It should be applied to the raw surface of the flaps at the time of amputation, and care should be taken to allow of free drainage by not putting in too many sutures. A few cases of tetanus with a long incubation period have occurred, but the majority of the patients affected with this terrible disease have not come under our care, as they have been treated at the stationary hospitals.

It is almost a matter of common knowledge that the size of the skin wound bears no relation to the severity of the injury. The lower jaw in one case was found to be so comminuted that it had to be removed with a Volkmann's spoon, yet the skin wound hardly admitted a probe, and the patient merely said that he thought his jaw was broken in two places. It is necessary, therefore, to make a detailed examination in every case—under an anæsthetic when possible, and with the necessary preparation for an immediate and adequate operation.

The war, too, has revealed an interesting series of cases which for the present must be called "nerve concussion," about the treatment and prognosis of which much has still to be learnt. When they occur in connexion with the spinal cord they may be the result of a blow from a bullet or piece of shell perhaps no nearer than upon the pack which the soldier is carrying. There is no external wound, but the patient becomes paraplegic. Such a condition is analogous to "railway spine," though it is not associated with neurasthenia at least in the early stages which have come under observation at the present time. A similar condition of paralysis without any gross injury has been noticed in the arms and legs apparently due to interference with the function of one or more nerve trunks, since exposure of the nerve does not show that it has been anatomically damaged. It is too soon yet to state whether recovery of function is the rule or the exception in these cases.

The mental state of the patient makes no difference to the rate of recovery. The English soldier, who is naturally sanguine, heals quickly in spite of suppuration; the Belgian is not far behind, though he is a prey to anxiety, because he grieves for his country, has lost sight of his relatives, and is in hospital in a foreign though friendly land. Like a brave fellow he bears himself in sickness as he does in health with magnificent courage.

Surgical Methods.

The net result of the work appears to show that as in ordinary civil practice meddlesome surgery is generally bad surgery. Wounds need no longer be probed, drained, and packed. Tempered with discretion, it is better to wait than to operate unless the patient is losing ground. Considerable experience, however, is required to decide when to wait and when to operate, because injuries which appear slight superficially may conceal conditions that demand immediate treatment. Looking to the fact that the chief infection seems to come from the patient's own skin, there can be no doubt that antiseptic surgery is preferable to aseptic methods. Dry dressings must give place to compresses and fomentations wherever possible. Iodine applications seem to be more effective than the solutions of perchloride and biniodide of mercury which have been hitherto the more generally used. The youth and health of the patients render the prognosis even of severe injuries correspondingly good and enable the surgeon to take waiting risks which might otherwise be thought hazardous. It is better, therefore, to err on the conservative rather than on the radical side of surgery; at any rate, in the earlier stages.

Chandos-street, W.

THE INTRATRACHEAL ADMINISTRATION OF CHLOROFORM.

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ONE hears nowadays a great deal concerning the intratracheal administration of ether and very little concerning the intratracheal administration of chloroform. I have of late administered chloroform by this method in operations on the nose and throat performed by Mr. W. S. Kerr, honorary surgeon to the Nose, Ear, and Throat Department of the Royal Infirmary, Sheffield, who has expressed his satisfaction with the method.

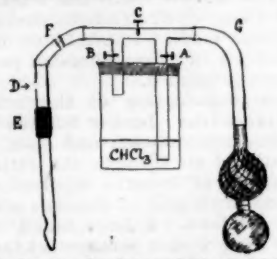

Diagram of apparatus for intratracheal administration of chloroform. A, B, C, Taps. D, Extra opening in catheter. E, Metal collar. F, Long rubber tube (represented broken) to catheter. G, Rubber tube from Junker bellows.

The apparatus used differs from a Junker's inhaler in that there is a cross tube connecting the entry and exit tubes. Each of these tubes carries a tap, A, B, and C (see diagram). When A and B are

open and C is closed it acts as an ordinary Junker's inhaler. When A and B are closed and C is open air alone is pumped into the lungs—in fact, "artificial respiration" can be performed. To this so modified apparatus a catheter is attached, which carries the chloroform vapour to the trachea. The catheter I have used is a gum elastic No. 12, but differs in two respects from an ordinary catheter. 1. There is an additional opening, D, of the same size as the eye, which opening is situated in such a position that when the catheter has been properly introduced it is outside the patient's mouth, and through which the patient can breathe. 2. Surrounding the catheter is a thin metal tube, E, which is situated in such a position that the patient's teeth are prevented from injuring the catheter. The length of this tube is about 1½ inches.

Method of administration.—The patient is first of all anæsthetised by chloroform sprinkled on a mask in the ordinary way; then before he is quite fully under the influence of the anæsthetic the upper part of the larynx is swabbed with 10 per cent. cocaine, and when quite under the catheter is introduced into the larynx by means of a bronchoscope and attached to the rubber tube connecting with the modified Junker inhaler. The introduction of the catheter into the larynx is rather liable to give rise to coughing unless the patient is fully under the influence of the anæsthetic. The middle finger of the left hand is then placed over the opening in the catheter, which is, as I have mentioned above, situated just outside the patient's lips, and then the right hand compresses the Junker bellows three times. The finger is then removed from the catheter opening, through which the patient is now allowed to take two or three breaths. If the patient has partially come round the chloroform vapour so pumped into the lungs is liable to excite coughing, which, however, ceases on the removal of the finger from the catheter opening and when two or three breaths have been taken by the patient. Then again cover up the opening and try two compressions and again remove the finger letting the patient breathe once, and so on, suitably varying the amount of chloroform and air until the patient is completely anæsthetised. This being accomplished, the assistant places a sponge, to which is attached a silk thread, at the back of the throat around the catheter. This, while preventing the entry of blood into the larynx, is not packed so tightly as to maintain a dangerous pressure in the lungs. One is unable to do this in intratracheal administration of ether, and as a consequence blood has a tendency to enter the larynx in operations on the nose and throat—not only has a tendency, but actually does do so, for when administering ether by the intratracheal method I have found blood in the eye of the catheter in a case where all possibility of traumatism was excluded.

During the continuation of the anæsthetic I usually compress the Junker bellows not more than four times in succession and then allow two or three breaths of air through the catheter opening, the number of breaths allowed depending naturally upon the degree of narcosis to which the patient has attained. I have found nothing to indicate that the pressure obtained in the lungs by four compressions of the Junker bellows is other than a safe one.

When the operation is nearly at an end I frequently cut out the chloroform vapour altogether by closing taps A and B and opening tap C (see diagram), and then on compressing the bellows and closing the catheter opening air is pumped into the lungs. In one case in which this was done, and in which the operation had lasted one hour, the patient was quite rational half an hour afterwards. I think this fact of being able to pump air into the lungs should be very valuable in those cases where there is a sudden cessation of respiration due to excess of chloroform, but of this I am fortunately unable to speak from experience.

I have been told that the intratracheal administration of chloroform is dangerous, but so far I have not found it so, the anæsthesia being very light and the control of the patient good—in fact, it is difficult to get the patient deeply under, and unless the throat is plugged round the catheter, as described above, the tendency is for the patient to show signs of returning consciousness. Should the operation be one in which there is no danger of blood entering the lungs, then it is not really necessary to have an external opening in the catheter, as there is sufficient space around the catheter for respiration.

The advantages of the method are: 1. The simplicity of the apparatus. 2. The easy portability. 3. The prevention of blood entering the lungs. 4. The fact of being able to give artificial respiration with the same apparatus. 5. Less hæmorrhage takes place than is the case when ether is given in operations about the nose and throat.

Now it has been maintained by some that the use of adrenalin in conjunction with chloroform is liable to lead to grave results; the fact that I have experienced none such may be taken as an additional indication of the safety of the method.

The following are cases in which the method has been used:—

1.	Male	aged 50.	Right Denker's operation.
2.	Male	,, 23.	Double Coldwell Lac operation and exploration of sphenoidal sinus.
3.	Female	,, 17.	Canfield Ballenger's operation.
4.	Male	,, 36.	Septal spur removal, intranasal antral operation.
5.	Female	,, 17.	Tumour of upper jaw (osteo-fibroma).
6.	Male	,, 18.	Removal of outer walls of inferior meatuses.
7.	Male	,, 24.	Submucous resection and exploration of antrum.
8.	Male	,, 20.	Submucous resection and Canfield Ballenger's operation.
9.	Male	,, 51.	Canfield Ballenger's operation.
10.	Male	,, 34.	Canfield Ballenger's operation.
11.	Male	,, 45.	Canfield Ballenger's operation.
12.	Male	,, 23.	Submucous resection.
13.	Male	,, 25.	Canfield Ballenger's operation.
14.	Male	,, 19.	Œsophagoscopy.
15.	Male	,, 21.	Double maxillary sinus operation and nasal polypi.
16.	Male	,, 65.	Pharyngectomy. Post mortem, lungs normal.

Case 14 was of interest in that the patient was an imbecile. He had an enlarged tongue, also swelling of the arytenoids, interarytenoid region, false cords, and the lower part of the pharynx. He was anæsthetised first of all by chloroform sprinkled on a mask. When the œsophagoscope was introduced it was found that such marked obstruction to respiration was caused that the operator was forced to desist. The intratracheal catheter was then introduced and anæsthesia proceeded with by the above-described method. The œsophagoscopy was now continued without the slightest trouble, the patient breathing quite easily through the catheter. Mr. Kerr, the operating surgeon, considered that the œsophagoscopy would have been

impossible unless this method of anæsthesia had been adopted.

Case 16 was one of carcinoma, death taking place about a week after the operation. At the necropsy the lungs did not show any signs of damage due to excessive pressure.

In preparing this paper my thanks are due to Mr. Kerr for much help and suggestion; to Mr. Stevenson, house surgeon to the Nose, Ear, and Throat Department; and to the Medical Supply Association for making all the apparatus used.

Sheffield.

ETHER ANÆSTHESIA BY THE INTRATRACHEAL METHOD: A REPORT ON 49 CASES.

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IN November, 1913, Dr. F. E. Shipway, of Guy's Hospital, visited Bristol and gave a demonstration of positive pressure ether anæsthesia in the theatre of the General Hospital. The subjects, by his kind permission, form Nos. 1 and 49 of our series.

The Apparatus.

The apparatus used by Dr. Shipway was that which he describes in the first number of the *British Journal of Surgery*. The expense of this outfit for a method of anæsthesia which is as yet barely past the experimental stage and which is not designed for universal application, made it necessary for us to improvise a cheap and simple plant which we could use until we were satisfied that more elaborate apparatus was justified. The air was delivered to the ether chamber of our apparatus through rubber tubing by a simple force-pump driven by an electric motor. The ether chamber was arranged on the surface-evaporation principle, no bubbling through being provided for. By means of a two-way tap the amount of air deflected into the ether chamber could be varied from "none" to 100 per cent. This ether chamber held about a pint of ether and the evaporating surface had a diameter of 5 inches. From this chamber the mixture was carried to the warming chamber and passed through a lead spiral. A T-piece of glass tubing was interposed between the warming chamber and the patient. The stem of the T led nearly to the bottom of a column of water 8 inches long; so that when the pressure in the patient's lungs reached 8 inches of water, air bubbled from the stem of the T-piece and a safety-valve action was set up. As a stand-by in case the force pump failed, we used a large foot bellows and rubber bag reservoir. To intubate the larynx we used gum-elastic catheters with straight extremities, stiffened by the incorporation of a stilette. They were introduced by the direct vision method by means of Hill's instrument.

Technique.

All the patients above 18 years of age had, one hour before the operation, a subcutaneous injection of hyoscine hydrobromide, gr. 1/100; morphine sulphate, gr. 1/6; and atropine sulphate, gr. 1/100. Some of our first cases had the area of the larynx painted with a 5 per cent. solution of cocaine, but we early discontinued the practice as a routine procedure, for we found that a reasonable depth of anæsthesia at the time of the intubation was the main factor in controlling the subsequent spasm of the glottis. When the patient was sufficiently anæsthetised by the inhalation method the anæsthetist opened the mouth with a gag introduced from the left side. The operator standing on the right side of the patient introduced the laryngoscope and lamp. The gag was then withdrawn, as the widely opened mouth tended to push backwards the base of the tongue, rendering the rima glottidis unnecessarily inaccessible. On obtaining a clear view the operator introduced the catheter and withdrew the laryngoscope and stilette. Glottic spasm and coughing usually followed the catheterisation of the larynx. To prevent the patient's biting the catheter a wooden prop resembling a cotton reel was slipped along the catheter until it lay between the teeth. The pump was then started and the rubber tube from the apparatus connected to the catheter. The patient usually passed fairly rapidly into the typical condition of quiet anæsthesia. At the finish of the operation the ether chamber was cut out and the patient supplied with pure air until a brisk corneal reflex was present. The catheter was then removed and natural respiration followed.

The main points which exercised us at different times were: 1. Our force pump was very noisy and delivered its air in a series of puffs. 2. A few cases could not be sufficiently deeply anæsthetised (Nos. 27 and 31), probably owing to the small size of the ether chamber and rubber tubing of too narrow a bore. 3. The water valve was very sensitive and was ideal so long as the respirations were quiet, but was apt to bubble and splash when coughing occurred. 4. The catheterisation of the larynx by the direct method is a manœuvre requiring practice and a definite amount of dexterity, so that in our cases the surgeon was nearly always responsible for its successful conduct. This, of course, made for delay in the commencement of the operation. When anæsthetised the appearance was, as Shipway says, that of a person asleep. The colour was practically always good—often better than when the patient took his place upon the table. The respirations were light and regular, the pulse good, and the corneal reflex absent or just present. The regularity of the supply of anæsthetic allowed of a lighter degree of anæsthesia than with the inhalation methods. The experiments of Janeway and Ewing would suggest that a method of anæsthesia which reduces the respiratory excursions to a minimum would be of value in reducing shock.

Review of the Cases.

Our early attempts at catheterising the larynx were prolonged and the results of slight trauma were sometimes apparent. Our inquiries regarding sore throat were sometimes answered in the affirmative and pain on swallowing complained of. In Case 8 one of the lateral incisors of the upper jaw was knocked out and the lower lip lacerated. This was the only case where a definite lesion was inflicted.

The question of subsequent pulmonary trouble claimed our attention. Our first case, upon which Dr. Shipway demonstrated, suffered from a severe tracheitis and coughed up quantities of stringy mucus. The fact that the method is not a guarantee against pneumonia is suggested by Case 7, in which death occurred, owing to this complication, a week after the operation. On the other hand, Case 36 had definite signs of pleurisy at the right base, which were not aggravated by the anæsthetic and which

disappeared in the course of an uneventful convalescence. Two others had slight coughs after their operations, but there was no rise of temperature. We found that the ease—or the reverse—with which the catheter could be passed into the larynx differed very greatly in individuals. The thick-necked type of patient offered considerable difficulty, so also did cases of goitre, whilst any infiltration of the base of the tongue, as in epithelioma, was also an obstacle. In operations on the mouth, throat, and nose the method compares favourably with the inhalation method, the necessity for hurry, with its associated bustle, being eliminated.

All the following cases, with the exception of Cases 16 and 49, were under the care of Mr. Hey Groves, who designed the apparatus used, and to whom I am indebted for permission to publish this paper. My thanks are due to Dr. Poole Lansdown and Mr. J. Lacy Firth for permission to report their cases.

Brief Notes of the 49 Cases.

Case 1.—A male aged 30. Chronic empyema with left cord paralysis. Hyoscine. 5 per cent. cocaine to larynx. Intubation of larynx was successful at the first attempt. The patient breathed badly; there were coughing and dyspnœa. He had dyspnœa afterwards and orthopnœa. Ten days after operation he discharged himself unrelieved, and died two weeks later. At the necropsy enlarged mediastinal glands were found, apparently sarcomatous.

Case 2.—A male aged 30. Sinus of thigh. Hyoscine. No cocaine. Catheterisation was effected after repeated attempts. Anæsthesia was satisfactory. The patient complained of stiffness of the throat next day, which passed off.

Case 3.—A male aged 21. Inguinal hernia. Hyoscine. No cocaine. Catheterisation was effected at the fourth attempt. Anæsthesia was typical and satisfactory. There was transient soreness of the throat next day.

Case 4.—A male aged 12. Tonsils and adenoids. No hyoscine. No cocaine. Catheter was easily introduced at first attempt. Anæsthesia was quiet and moderately deep. The tonsils were dissected piecemeal to the accompaniment of free hæmorrhage. Convalescence was uneventful.

Case 5.—A female aged 67. Gall-stones. Hyoscine. No cocaine. This patient was of the thick-necked type and attempts to introduce a catheter with Hill's speculum failed repeatedly. Catheterisation was ultimately effected by the digital method. Anæsthesia was typical. Transient sore throat was present next day.

Case 6.—A female aged 17. Goitre. No exophthalmos or tachycardia. Hyoscine. No cocaine. Prolonged and repeated attempts at catheterisation failed and the operation was finished under anæsthesia by the inhalation method.

Case 7.—A male aged 52. Epithelioma of tongue. There was a large and foul ulcer. Hyoscine and cocaine were given. The operation, including removal of the glands, took 70 minutes. The catheter was passed without difficulty. Typical quiet anæsthesia. Four days after the operation the patient developed signs of pneumonia at the right base and died a week after his operation.

Case 8.—A male aged 15. Suppuration in an appendix wound with signs of ileus. No hyoscine or cocaine. Catheterisation took five minutes. Typical anæsthesia. An upper incisor was knocked out and the lip lacerated during the process of catheterisation. The patient made a good recovery.

Case 9.—A male aged 43. Double inguinal hernia. Hyoscine given. No cocaine. Introduction took eight minutes. Anæsthesia was continued with the foot bellows, which were found to be inadequate. During the preparation of the motor the catheter slipped out and the operation was finished by the inhalation method.

Case 10.—A male aged 21. Sinus of thigh. Hyoscine. No cocaine. Introduction took two minutes. Anæsthesia was light but sufficient. No subsequent sore throat was noticed.

Case 11.—A male aged 28. Tuberculous pyopneumothorax. Hyoscine and cocaine. Introduction took two minutes. The patient remained a good colour but coughed frequently throughout the operation. Sinuses explored and found to lead into the mediastinum. No subsequent sore throat. The cough did not appear aggravated.

Case 12.—A male aged 48. Hydrocele. Chronic bronchitis. Hyoscine and cocaine. Catheter introduced at first attempt. Colour remained excellent throughout the operation. The cough was not aggravated.

Case 13.—A male aged 27. Hæmorrhoids. Hyoscine and cocaine. Catheter introduced easily. The patient did not resent stretching of the sphincter. No subsequent cough or sore throat.

Case 14.—A male aged 52. Enlarged prostate. Hyoscine and cocaine. Catheter introduced at first attempt. Immediately afterwards the pulse became weak but improved again. Suprapubic prostatectomy was performed. Anæsthesia was light, quiet, and adequate. No subsequent sore throat or cough.

Case 15.—A male aged 13. Osteomyelitis of foot. No hyoscine. Cocaine. Intubated at second attempt—there was considerable laryngeal spasm. A reflex was present at the commencement of the operation, but quickly disappeared. No sore throat was noticed afterwards.

Case 16.—A male aged 55. Epithelioma of tongue. (Mr. J. L. Firth's case.) Intubation was tried repeatedly for 30 minutes, but unsuccessfully owing to infiltration of the base of the tongue. Œdema of the uvula supervened during the operation, which was performed under chloroform administered through a laryngotomy opening. The patient died suddenly 28 hours later from heart failure.

Case 17.—A female aged 18. Duodenal ulcer. Hyoscine and cocaine. Intubation was effected at the first attempt. The anæsthesia was uneventful; the patient remained a good colour and breathed quietly. Convalescence was uneventful.

Case 18.—A male aged 48. Exostosis of femur. Hyoscine and cocaine. Intubation without difficulty. Anæsthesia typical and uneventful. No subsequent trouble.

Case 19.—A male aged 50. Recurrent paroxysmal vesical pains with frequency of micturition, for which no cause could be found. Hyoscine. No cocaine. Intubation successful at first attempt. Typical anæsthesia. The spinal cord was exposed and a number of posterior nerve roots divided. No subsequent sore throat.

Case 20.—A male aged 36. Hernia. Hyoscine. No cocaine. The patient was of the thick-necked type and intubation took 10 minutes. Typical quiet anæsthesia. No sore throat or cough subsequently.

Case 21.—A male aged 56. Exploration of suprapubic wound. Hyoscine. No cocaine. Intubation easily effected. Typical uneventful anæsthesia. No subsequent trouble.

Case 22.—A male aged 50. Cerebellar tumour. Decompression operation. Intubation took five minutes. The patient was then turned on his face and anæsthetic was continued for 20 minutes very successfully. The catheter then fell out and inhalation was resorted to. There was a little cough at night afterwards, which passed away quickly.

Case 23.—A female aged 45. Hæmorrhoids. Hyoscine. No cocaine. Intubation took five minutes. Typical quiet anæsthesia. No reflex on dilating sphincter. No unpleasant after-effects.

Case 24.—A female aged 34. Hysterical contractures of legs. Hyoscine. No cocaine. Intubation took five minutes. Quiet anæsthesia. No subsequent sore throat. This patient during a previous anæsthetic with a chloroform mixture had caused some anxiety as regards her pulse and respirations.

Case 25.—A male aged 23. Hernia. Hyoscine. Catheter introduced easily. Typical anæsthesia. This patient said that his throat was a little sore after the operation, but "not to trouble him."

Case 26.—A female aged 29. Gastric ulcer. Hyoscine and cocaine. Intubation easily effected. Light but adequate anæsthesia. Gastro-enterostomy was performed. Convalescence uneventful.

Case 27.—A male aged 47. Duodenal ulcer. Hyoscine. No cocaine. Intubation successful at second attempt.

Sufficiently deep anæsthesia could not be obtained; a brisk reflex following any attempt to proceed with the operation. The inhalation method was resorted to. On recovering from the anæsthetic the patient had a slight cough which he had not noticed before.

CASE 28.—A male aged 52. Catheterisation. Hyoscine. No cocaine. Intubated at first attempt. Typical anæsthesia. No sore throat.

CASE 29.—A male aged 39. Hernia. Hyoscine. No cocaine. Intubation took eight minutes; the patient was thick-necked. Adequate anæsthesia. He said that his throat was sore after the operation; there was some pain on swallowing.

CASE 30.—A male aged 26. Hernia. Hyoscine. No cocaine. Catheter was introduced at first attempt. Typical anæsthesia. There was a little soreness of the throat. Two days after the operation a loose cough developed which got slowly better.

CASE 31.—A male aged 40. Stricture. Perineal section. This patient had neither hyoscine nor cocaine. The introduction of the catheter took seven minutes. The anæsthesia was not good; there was a brisk reflex which could not be diminished, and it was necessary to resort to the inhalation method before the operation could be proceeded with. There was no subsequent sore throat or cough.

CASE 32.—A female aged 45. Laparotomy. Hyoscine. No cocaine. Intubation was effected at the first attempt. Typical anæsthesia throughout the operation. No after-effects.

CASE 33.—A male aged 15. Appendix abscess. No hyoscine. No cocaine. Intubation successful at first attempt. Typical uneventful anæsthesia. The patient vomited for 36 hours.

CASE 34.—A female aged 33. Femoral hernia. Hyoscine. No cocaine. Larynx was intubated at first attempt. Typical anæsthesia without after-effects.

CASE 35.—A male aged 46. Gastric ulcer. Hyoscine. No cocaine. Catheter introduced without difficulty. The patient soon passed into a condition of quiet typical anæsthesia. No subsequent sore throat or cough.

CASE 36.—A female aged 38. Appendix abscess. This patient had signs of involvement of the base of the right lung in the shape of dulness and diminution of the breath sounds. The respirations were increased to 27–30. The temperature was normal. Hyoscine was given but no cocaine. Larynx was catheterised without delay. Typical quiet anæsthesia was soon obtained. There was a troublesome cough at night after the operation, but it slowly got better.

CASE 37.—A male aged 21. Ventral hernia in appendix scar. Hyoscine. No cocaine. Larynx was easily catheterised. This was the one case in the series where it was found necessary to diminish the supply of ether owing to the depth of anæsthesia induced.

CASE 38.—A male aged 28. Sciatica. Hyoscine. No cocaine. Catheter easily introduced with the patient on his side. The anæsthetic was continued with the patient lying on his face. The sciatic nerve was exposed, stretched, and injected with novocaine. There was a brisk reflex at first, and a tendency to resent the manipulations was present throughout the operation.

CASE 39.—A male aged 54. Fractured humerus—amputation. Hyoscine. No cocaine. Intubation successful at first attempt. Typical anæsthesia. No cough or sore throat.

CASE 40.—A female aged 36. Double inguinal hernia. Hyoscine. No cocaine. Catheterisation of larynx took ten minutes and was successful at the third attempt. The patient then passed rapidly into the typical condition of anæsthesia. There was no subsequent sore throat.

CASE 41.—A male aged 35. Perforated duodenal ulcer. No hyoscine. No cocaine. Larynx catheterised at first attempt. Typical quiet anæsthesia, whilst ulcer was sewn over. Uneventful convalescence.

CASE 42.—A female aged 21. Cerebellar tumour, preliminary decompression. Hyoscine. No cocaine. Larynx was catheterised without difficulty and the patient was turned on her face, in which position the anæsthetic proceeded quietly. There was severe hæmorrhage from the scalp and the patient became pulseless. On turning the patient over at the end of the operation there was no sign of life, and the usual treatment failed to resuscitate her.

CASE 43.—A male aged 35. Hernia and varicocele. Hyoscine. No cocaine. Larynx was catheterised with ease. Typical quiet anæsthesia. No after-effects.

CASE 44.—A male aged 5 weeks. Hare-lip and cleft palate. No hyoscine. No cocaine. Great difficulty was experienced in introducing a narrow black rubber catheter into the larynx. The ordinary method was quite unsuccessful, but after several attempts the larynx was catheterised through a small urethral speculum. A glass funnel was attached to the end of the catheter, and gauze on which was dropped chloroform, placed inside; but the patient could not be kept anæsthetised and we had to resort to Junker's inhaler. The hare-lip was repaired. There was no cough subsequently.

CASE 45.—A female aged 31. Appendicitis. Hyoscine. No cocaine. Catheterisation of larynx effected at first attempt. Typical anæsthesia. No subsequent cough or sore throat.

CASE 46.—A female aged 24. Tuberculous knee. Arthrectomy and wiring, medullary peg. Hyoscine. No cocaine. Catheterisation of larynx presented no difficulty. This patient passed into a condition of deep anæsthesia and was pale, but otherwise gave no trouble. There were no after-effects.

CASE 47.—A female aged 19. Necrosis of jaw. Hyoscine. No cocaine. Intubation at second attempt. Quiet anæsthesia whilst manipulations inside the mouth were in progress. No after-effects.

CASE 48.—A male aged 37. Tuberculous sinus of back. Hyoscine. No cocaine. Larynx catheterised at first attempt. Typical anæsthesia. No after-effects.

CASE 49.—A male aged 58. Hernia and hydrocele (Mr. Lansdown's case). Hyoscine and cocaine. Anæsthetic conducted by Dr. Shipway. Catheterisation was easily effected. Typical quiet anæsthesia. No after-effects.

St. Austell, Cornwall.

ACCESSORY SPLEEN CAUSING ACUTE ATTACKS OF ABDOMINAL PAIN.

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AND
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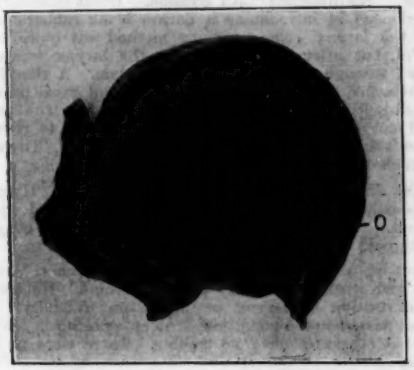
THE frequency with which the pathologist meets with accessory spleens at necropsies makes it rather remarkable that their presence is rarely noted by the operating surgeon. Adami and Nicolls[1] state that they are found at 11 per cent. of all necropsies and that they may reach the size of a walnut. Shennan[2] states that they are "frequently found." Their situation varies. They may lie in the gastro-hepatic or gastro-colic omenta, or even in the stomach wall itself. On consulting various standard text-books on surgery we have found their occurrence noted once only,[3] and that merely as an anatomical fact, and not because their presence had any pathological significance. Rocher[4] states that he has frequently at operations observed the occurrence of accessory spleens, especially in young subjects. On examination of bodies in the post-mortem room he found that those seen in the infant were in many

[1] Adami and Nicolls: Systemic Pathology, 1910.
[2] Shennan: Post-mortems and Morbid Anatomy, 1912.
[3] Moynihan: Keen's Surgery, 1906.
[4] Rocher: Journal de Médecine de Bordeaux, vol. xxxiii., 1903

cases undergoing atrophy, and that the splenic tissue was difficult to recognise. These were less red than the others, almost yellow, and "of a faded appearance." On the contrary, those of a red colour showed the normal structure of the spleen. From the diminished frequency of their occurrence

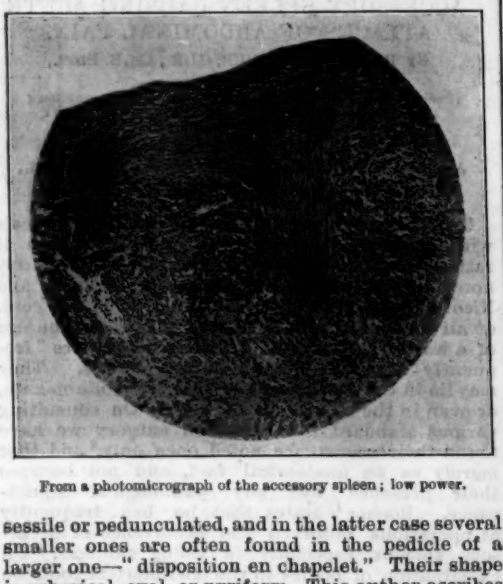
FIG. 1.



From a photograph of the accessory spleen with omentum (o) reflected. Natural size.

in the adult he thinks these accessory organs show a tendency to disappear with age. Two, four, or seven of these organs were most commonly met with in each case, but Orth records 400 in one instance. Their situation Rocher has noted post mortem "at the hilum of the spleen, in the gastro-splenic omentum, in the pancreatico-splenic ligament, and in the great omentum." They may be

FIG. 2.

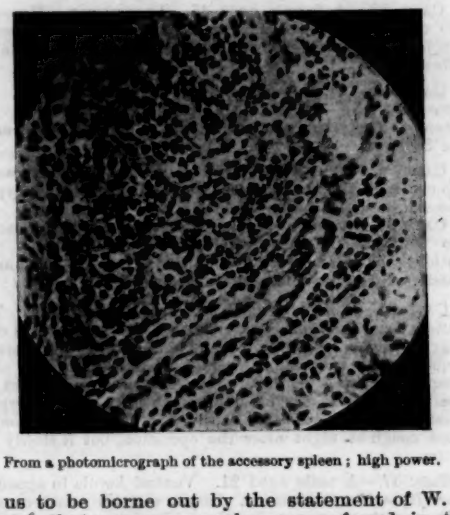


From a photomicrograph of the accessory spleen; low power.

sessile or pedunculated, and in the latter case several smaller ones are often found in the pedicle of a larger one—"disposition en chapelet." Their shape is spherical, oval, or pyriform. This author ascribes their distribution to their development in the dorsal mesentery, and especially that segment from which the stomach and pancreas are formed. He appears to regard them as portions of the normal organ which have been separated during development.

Albrecht, of Vienna, quoted by Osler and Macrae,[5] reports a case in which "an enormous number of supernumerary spleens was found; in the usual situation was a normal spleen the size of a walnut with the splenic artery and vein in their normal position. The other spleens were scattered not only in the mesogastrium, but also on the peritoneum—as, for example, on the hepatic ligament and on the convexity of the liver; the largest number was found on the mesentery and transverse mesocolon; there were more than 30 in Douglas's pouch. Each of these spleens was enclosed in a separate capsule covered by peritoneum and exhibited the gross microscopic structure of splenic tissue." Warthin suggests that this is not simply a congenital condition, but rather a compensatory process of accessory spleen development secondary to a congenitally deficient primary spleen or to acquired disease of the spleen. This view seems

FIG. 3.



From a photomicrograph of the accessory spleen; high power.

to us to be borne out by the statement of W. J. Mayo[6] that accessory spleens are found in the pedicle during splenectomy for tumours, &c.

The fact of a patient who presented a very definite set of symptoms produced by an accessory spleen coming before our notice induced us to search for other published cases, and we were able to trace but one similar case. We summarise both these cases.

In the case which we ourselves observed the patient was a young woman aged 25, who three years previously had had her right kidney removed for calculous pyonephrosis. A year previously to her admission to hospital she was suffering from an attack of tonsillitis, and while her medical attendant was treating her for that condition she complained of abdominal pain. One of us (R. C. A.) who saw her at that time discovered a mass about the size of a golf ball in the left upper quadrant of the abdomen. This mass could be freely moved about all over the upper abdomen and was somewhat tender to touch. The only other clinical facts of note were a greatly enlarged left kidney, possibly a compensatory hypertrophy, and a considerable degree of albuminuria. A few days later another examination was made, and this time the lump could not be felt until the patient had sat up in bed, when it was easily palpated. She was

[5] Osler and Macrae: System of Medicine, 1908.
[6] W. J. Mayo: Surgery, Gynecology, and Obstetrics, March, 1913.

sent to the surgeon who had previously removed her kidney, but owing to her general health being below par he was unwilling to operate. She returned home and improved in general health, but was subject to frequent attacks of pain of a dragging nature in the upper abdomen, this pain having no relation to the taking of food. The pain was usually rendered worse when the patient stooped, and was unaccompanied by other symptoms. These attacks of pain occurred almost daily, coming on suddenly, lasting for one or two hours, then passing off and leaving her quite well.

In August, 1912, the patient was admitted to the Royal Infirmary, Edinburgh, under the care of Mr. J. W. Dowden. The lump remained about the same size as formerly, and otherwise, with the exception of the enlargement of the left kidney, nothing abnormal was detected on examination. The spleen was normal in size. Her general health was good, and the amount of albumin in the urine very small. The tentative diagnosis of mesenteric or omental cyst was made, and as the patient said that the pain was exceedingly severe when it occurred and that it was making her miserable, Mr. Dowden decided to explore the abdomen. Under a general anæsthetic an incision was made through the upper part of the left rectus muscle. The viscera appeared normal, and no trace of any tumour could be found till the hand was passed up under the diaphragm on the left side and a rounded mass was felt. This was easily delivered at the wound, and proved to be an accessory spleen about the size of a small tangerine orange situated at the lowest part of the great omentum. There were several large vessels running towards it. The omentum was ligatured and the splenculus, which was entirely surrounded by omentum, was removed. The stump of the omentum was carefully stitched to prevent adhesions forming and the abdomen closed. No other accessory spleens were seen. Convalescence was uninterrupted and the patient had no recurrence of symptoms.

On examination the specimen was a perfect sphere (Fig. 1), and on section it presented a homogeneous appearance. Microscopically its structure resembled that of the spleen, except that the lymphoid follicles were not so well developed and that there was considerable fibrosis of the whole organ with recent and old hæmorrhages (Figs. 2 and 3).

We regard the cause of the pain to have been congestion of the viscus from torsion of the omentum obstructing the return blood flow. There was no necrosis visible and there had been apparently no arterial obstruction.

A similar case has been recorded by Témoin (Hôtel-Dieu, Bourges).[7]

The patient was a woman aged 35 years. There was no previous history of illness except that since the age of 20 she had suffered greatly during her menstrual periods. At the first of these painful periods she thought she felt a swelling in her abdomen associated with some abdominal pain. Three years ago she experienced a renewal of this abdominal pain, and discovered just above the umbilicus almost in the middle line a swelling of the size of a large nut. Since that time she had a suffered from constant pain and impaired digestion, with vomiting of stomach contents and bile. During the past year she had consulted several medical men on account of progressive loss of flesh. She came to Dr. Témoin, who discovered a firm tumour, painless on light palpation, situated in the middle line of the abdomen a little above the umbilicus, and of the size of a Tangerine orange. The tumour was slightly movable. Nothing was done at this time, but five months after the patient returned in worse health than before. She had had attacks like intestinal obstruction, and the tumour had if anything slightly enlarged. The surgeon adhered to his former diagnosis of intestinal tumour and proposed a laparotomy.

Under chloroform an incision was made in the middle line and the abdomen was opened. The tumour was discovered lying beneath the omentum, which was attached to the surface of the tumour. The adhesions seemed firm, but were easily separated, as they consisted only of a few vessels. The tumour came into view with its surface lying closely against a loop of intestine. It seemed to be merely pressed against the gut and not to form part of the wall. With blunt dissection the surgeon was able to isolate the tumour, and soon found it attached only by a few small vessels running to the margin of the mesentery. The tumour was removed, the abdomen closed, and the patient made a rapid recovery. Three months after the operation she was very well with perfect digestion and no pain.

The tumour was of the size of a Tangerine orange, and on section appeared like a healthy spleen. Histology: Pulp in small amount; trabeculæ very thick, containing many calcareous particles; some sclerosis of the organ.

In reporting this case Témoin states that he has failed to find a similar one recorded. He was uncertain at first whether it was a movable spleen, but the symptoms did not correspond, and in all the cases he found recorded the movable spleens were hypertrophied. He therefore decided that it was an accessory organ which by its weight or by pressure had caused the digestive disturbances.

For our own part we are inclined to believe that, as in the first case, a species of volvulus of the organ took place. This resulted in some interference with the mesenteric circulation and in the kinking of the loop of gut to which the splenculus was attached, giving rise to recurrent attacks of pain and vomiting resembling intestinal obstruction.

We are indebted to Mr. Dowden for permission to publish his case, and to Dr. Disney Cran who during a residence in Paris transcribed for us the French references unobtainable in this country.

Edinburgh.

[7] Témoin: Archives Provinciales de Chirurgie, Paris, vol. vii., 1898.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

NOTES OF A CASE OF ACIDOSIS FOLLOWING CLINICAL DIPHTHERIA.

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THE patient, a female aged 4 years, was received into the Great Yarmouth Isolation Hospital on Oct. 25th, 1912, suffering from clinical diphtheria.

Previous history: Measles only; no attacks of vomiting. On admission: Pallid face, tonsils swollen, the left covered with a large patch of membrane; tongue thickly furred; left submaxillary glands very much enlarged; pulse 120, small; temperature 97·6° F. She received 4000 units of antidiphtheritic serum. Swabs showed presence of Hoffmann's bacillus; Klebs-Löffler bacillus not seen. Oct. 26th: Thick nasal discharge. Nov. 1st: Albuminuria lasting 11 days. 6th: Nasal voice; no regurgitation. 16th: Voice normal; palate moves. 26th: Vomited undigested food. Dec. 3rd: Vomited after liquorice powder; colour good. 4th: Quite well; allowed to get up. 7th: Vomited watery fluid after breakfast; pallid; heart normal; vomited curdled milk at 12, and again after water at 2 P.M. Complained of thirst and headache. 8th: Vomited six times during morning; after that retained water; enema given with constipated result; tongue clean; heart *nil;* knee-jerks present; no albumin. 9th: Vomited 16 times during the day; no abdominal distension or retraction; pulse fair and colour good. Vomit had acid odour, both it and the urine giving the colour reaction with ferric chloride. Enemata of sodium bicarbonate half-drachm doses given every three hours. 10th:

No vomiting during the night; enemata given six-hourly; child grew drowsy during latter part of day. 11th: Vomited again at 10 A.M. Takes well of sodium bicarbonate in water. Is fretful. 12th: Vomited once this morning. Still on enemata every six hours, as well as orange juice and sodium bicarbonate by mouth. Put on bovril. 13th: Vomited twice this morning; very torpid; sodium bicarbonate increased; one drachm four-hourly by rectum, whilst the bread-and-butter and milk-pudding was sprinkled with it; making about 1½ oz. in the 24 hours. Vomited once on the 14th and on the 15th; after that date no further nausea, child taking food well and got quite bright mentally. 18th: Enemata omitted, but sodium bicarbonate still added to food. 19th: Sodium bicarbonate reduced to half an ounce in 24 hours. 20th: Very little colour with ferric chloride. 21st: Urine gives no colour with ferric chloride and patient put on fish diet. 28th: Swab gave Hoffmann's bacillus. Jan. 6th: Ready for discharge.

Fortunately the odour of the vomit was marked, or else the sickness might have been thought to be of vagal origin. The torpid condition of the child was not, however, that associated with the latter, and appeared rather a characteristic symptom; it improved rapidly with the increased doses of sodium bicarbonate; this latter was reduced as soon as effervescence was given with ferric chloride and the urine.

Great Yarmouth.

NOTES OF A CASE OF EXTENSIVE SURGICAL EMPHYSEMA.

BY E. NORMAN BUTLER, M.R.C.S. ENG., L.R.C.P. LOND.

A CASE of surgical emphysema presenting features that seem worth recording recently came under my notice.

The patient, an Indian, was injured in a railway accident wherein a portion of a train fell over an embankment some 40 feet high, and was found lying with a heavy baulk of timber across his chest. The accident occurred about 9.30 P.M. I first saw him at about 12.30 A.M., when owing to the difficulty of the circumstances and the numbers of others injured, an exhaustive examination was not possible. He then showed enormous swelling of the face, neck, and trunk generally, the crepitus of surgical emphysema being everywhere obtainable. There being no obvious immediate treatment called for, I left him in order that I might attend to others whose injuries were more amenable to first aid, and I cannot say if the limbs were at that time involved.

He was next seen some six hours after, when the injured had been conveyed to hospital, and I noticed that while awaiting his turn to be carried into the hospital he was unconcernedly smoking a cigarette. He showed little respiratory distress and talked intelligently. By this time the emphysema involved the whole trunk, the neck, face, whole of the scalp, the arms as far as the wrists, and the legs to just below the knees. Pain was complained of on pressure over the lower ribs of the left side, though no actual fracture of ribs could be made out owing to the condition of the subcutaneous tissues. There was no external wound. Dr. Lucius Nichols, who kindly assisted me to deal with the injured, expressed his opinion that further entry of air into the tissues might be prevented if an attempt was made to close the entry to the pleuræ, but while preparations were being made to do this the patient suddenly exhibited most extreme dyspnœa and the pulse became impalpable, and he died in two or three minutes from the outset of these symptoms.

At the post-mortem examination the seventh rib on the left side was found to be fractured and a fragment of bone had penetrated the lung for a distance of one or one and a half inches. The lung showed no sign of collapse, nor was there any pneumothorax.

The points of interest exhibited by this case are, I think: (1) The great extent of the surgical emphysema; (2) the rapidity of its spread; and (3) the fact that death was seemingly due to sudden syncope rather than asphyxia, as evidenced by the comparative absence of dyspnœa until within a few moments of death.

Magadi Junction, British East Africa.

Medical Societies.

MEDICAL SOCIETY OF LONDON.

Operative Treatment of Tumours of the Cæcum and Colon.

A MEETING of this society was held on Oct. 26th, Sir J. BLAND-SUTTON, the President, being in the chair. A discussion was held on the Operative Treatment of Tumours of the Cæcum and Colon, especially in relation to immediate resection, colostomy combined with secondary resection, and short circuiting.

Mr. H. J. WARING opened the discussion from the point of view of malignant disease of the cæcum. He said that malignant disease of the cæcum in the majority of cases was a columnar-celled carcinoma, usually of the exuberant type, forming a mass protruding into the lumen of the cæcum, or less commonly an annular ring of new growth, scirrhous in character, and tending at a comparatively early stage to give rise to obstruction in the intestinal canal. Generally the exuberant type of growth commenced in the region of the ileocæcal valve, whilst the annular type was more common where the cæcum passed into the ascending colon. Occasionally, however, a constricting growth might be met with on the proximal side of the ileocæcal valve, in which case it would be found to commence in the mucous membrane of the most distal part of the ileum and to involve the cæcum by direct extension. A small proportion of neoplasms of the cæcum were sarcomata, and these usually commenced in the wall of the cæcum beyond the ileocæcal valve. He exhibited specimens of these different forms of growth. Included with the cæcum was, he supposed, the vermiform process. True carcinoma of this process in his experience was extremely rare. Some years ago he investigated 600 consecutive cases of disease of the vermiform process, and no single case was definitely shown to be true carcinoma. In the museum of St. Bartholomew's Hospital there were two specimens which had been called carcinoma. They, however, histologically presented more the characteristics of endotheliomata. They were removed from patients aged 27 and 29 respectively. The two specimens were exhibited, and in addition a microscopical preparation of a similar condition. When compared with carcinoma in other parts of the body, carcinoma of the cæcum (and other portions of the colon) was, on the whole, he thought, less malignant, the rate of growth of the neoplasm being slower, infection of lymph vessels and glands later, whilst visceral secondary growths only appeared when the affection had existed for a considerable period. This diminished malignancy was especially the case when the neoplasm was of the adeno-carcinomatous type and extended into the lumen of the bowel as a cauliflower-like protuberance. Sarcoma, on the contrary, appeared to be quite as malignant as when occurring in other parts. Concerning frequency he found that during the years 1909–13 107 cases of malignant disease of the large intestine (excluding the rectum) were admitted into the surgical wards of St. Bartholomew's Hospital, and

of these 17 were examples of carcinoma of the cæcum. No case of sarcoma of the cæcum was met with during this period nor of carcinoma of the vermiform process. As regards treatment, cases of malignant disease of the cæcum could conveniently be considered under the following groups:—

1. *Cases in which the patient's general physical condition was good, there were no marked signs of intestinal toxæmia or anæmia denoting toxic poisoning from disintegration of the growth, absence of intestinal obstruction, whilst the tumour in the cæcal region was movable.*—This was the most favourable class of case, but unfortunately few patients presented themselves for treatment at this stage, or if they did, refused operative help. The operation which in his opinion was to be recommended was resection of the growth, together with the adjacent portions of the ileum and colon and also the lymph vessels and glands receiving vessels from the diseased area, followed by lateral anastomosis of the ileum and colon. When the anastomosis had been completed and the cut ends of the ileum and colon inverted, the two blind ends should be fixed to the parietal peritoneum of a portion of the external wound, so that if any leakage took place it might do so externally and not into the peritoneal cavity. A small drain should be passed down to the region of the fixed inverted ends for this purpose. If no leakage took place it could be removed after a few days, whilst if leakage did occur it would at once become manifest and a portion of the external wound could be opened up so as to facilitate the exit of any material which might pass from the intestine. Occasionally sloughing of a portion of the inverted ends occurred, in which case extension of a septic process to the peritoneum would be avoided. He had just received a letter from a hospital patient upon whom this operation had been done in 1910; he stated that he was still quite well, could walk eight miles a day, and do his work as a carpenter.

2. *Cases with acute intestinal obstruction, presenting signs of intestinal toxæmia, and with a mass in the right iliac fossa diagnosed as a diseased cæcum.*—When a patient had definite signs of intestinal obstruction and consequent intestinal toxæmia the plan of treatment which was most likely to be followed by a successful result was immediate enterostomy, and when the obstruction and toxæmia had been combated resection and anastomosis. The parietal incision should be made in the right iliac fossa and the portion of ileum above the cæcum fixed in the wound and drained. Often it would be found of considerable advantage in these cases to bring the cæcum, portions of colon and ileum and adjacent mesentery with contained lymph glands out through the external wound and to fix the mass there as a "protrusion," the ileum being drained as already mentioned. At the expiration of a few days the entire mass might be cut off, leaving two enterostomy openings. At a later date the spur between the two openings could be destroyed with an enterotribe, and the external opening closed. This method of treatment was most applicable in patients whose general physical condition was not good and in whom there was considerable doubt that they would survive a severe excision and anastomosis operation. In those cases in which a simple enterostomy was performed, after the patient had recovered from the intestinal toxæmia and the general condition had improved, a resection and lateral anastomosis in the manner already mentioned should be carried out.

3. *Cases in which the mass connected with the cæcum was attached either to the floor of the right iliac fossa or to the adjacent portion of the abdominal wall, on which account excision was considered inadvisable; and signs of acute intestinal obstruction were absent.*—In this group of cases in his opinion the best method of treatment was ileo-colostomy, the artificial communication or anastomosis being made between a coil of the ileum, a little above the ileocæcal valve, and the transverse colon, at its most dependent portion. This, of course, was a palliative operation, but often patients lived a considerable time in comparative comfort. He had notes of cases where life had been prolonged in this manner for 18 months and two years.

4. *Cases of acute intestinal obstruction due to malignant disease of the cæcum, but in which it was not possible to localise the site of the disease owing to abdominal distension.*—A median exploratory incision should be made in these cases, and the further treatment determined according to the pathological conditions discovered. Usually it was safest to perform first an enterostomy and establish drainage. When the patient had recovered from the toxæmia due to the obstruction and the general condition had improved, the further treatment could be carried out. Thus, if the cæcal tumour was found to be operable, resection and lateral anastomosis could be performed, and at a later date the enterostomy opening closed, whilst in inoperable cases ileo-colostomy should be done, the enterostomy opening being made use of in establishing the communication with the transverse colon.

It occasionally happened that a diagnosis of carcinoma of the cæcum was made, and on operation the pathological condition was found to be either actinomycosis or tuberculosis in the ileocæcal region. He showed a specimen obtained from a patient in whom he had made the diagnosis of carcinoma of the cæcum and on exposure of the hard mass in the right iliac fossa found it to be actinomycosis. The patient was treated by large doses of potassium iodide, and at the end of 12 weeks had apparently recovered. Eight years afterwards the patient again came under his observation and then had an extensive inoperable carcinoma of the stomach from which he died. Post mortem, nearly all traces of the extensive mass in the right iliac fossa had disappeared, the only remains being a few adhesions and obliteration of the proximal portion of the vermiform process.

Mr. JAMES SHERREN said that the divisions of the large intestine with which he had to deal had received various names. These until recent years depended upon its relations to the pelvis—the descending colon being that part outside the limits of the false pelvis, the sigmoid that attached to the wall of the false pelvis, and the rectum that below the level of the pelvic brim. The descending colon still terminated at the iliac crest, but the sigmoid had been anatomically separated into two, one part—the iliac colon—being attached to the iliac fossa without a mesentery, the other—the pelvic colon—forming a loop completely surrounded by peritoneum and attached by its mesentery to the side wall of the pelvis. Its lower limit had been altered, and it now terminated where the complete peritoneal investment of the gut ceased—usually about the third piece of the sacrum. Anatomical divisions were often unsuited for surgical purposes. As an example, he indicated the duodenum with its three or in some classifications four anatomical portions, best divided for surgical purposes into two parts, supra- and infra-ampullary. For the purposes of surgery the iliac should be included with the descending colon, for both portions were as a rule bare of peritoneum posteriorly, features which had an important bearing on operative procedures. He would therefore divide his remarks into (1) the treatment of tumours of the pelvic colon, and (2) of those of the descending, including the iliac, colon. The pelvic colon was the most common site in the large intestine for the development of carcinoma, the descending colon the rarest. Thus among 376 cases of carcinoma of the colon treated at the London Hospital during the ten years 1901–11, 211 were of the pelvic colon, 20 of the descending colon. Among 68 cases which had been under his care, in 36 the growth was situated in the pelvic colon, in five in the descending colon. The problem of the surgical treatment was complicated on account of the rarity with which the diagnosis was made before the onset of urgent symptoms of intestinal obstruction. Attacks of pain, diffuse, or in some cases localised in the right iliac fossa and leading to the diagnosis of chronic appendicitis, were, however, very rarely absent. In one of the cases in which he operated for acute obstruction the appendix had been removed a few weeks previously on account of pain in the right iliac fossa thought to be of appendicular origin. Among the London Hospital cases over 40 per cent. were operated on for acute obstruction. In 24 of his own cases the operation had to be carried out for the relief of obstruction. In the cases with urgent obstruction free drainage of the distended intestine was indicated. At the same time, if the condition of the patient admitted, a careful examination should be made of the growth, glands, surrounding peritoneum, and liver to decide the question of attempting excision at a later date. Primary resection should *never* be carried out in the face of urgent obstruction. If in any doubt it was wiser to drain temporarily before attempting a resection. The seat of drainage and its relation to the operability of the tumour must be considered. In the discussion on malignant disease of the large intestine at the International Medical Congress of last year Bastianelli and others were strongly in favour of a preliminary cæcostomy.[1]

[1] THE LANCET, August 16th, 1913, p. 480.

Unless compelled by disaster to the cæcum, present or impending rupture or gangrene, he considered it an unwise procedure. It necessitated, in cases suitable for removal, a three-stage operation. In the inoperable cases the discomfort of an artificial anus in the cæcal region was undoubtedly greater than that of one in the transverse colon or left iliac regions. Among his series cæcostomy was necessary in three; in only one was he able to do an excision followed in 14 days by closure of the cæcostomy. Operation in which the growth was exteriorised and removed at the original operation (Paul), or after an interval (Mikulicz), leaving the closure of limbs to a later stage, he did not favour. It was applicable only for growths in a movable pelvic colon, and even here removal of sufficient bowel with its lymphatic supply was difficult, if not impossible. Closure of the artificial anus was tedious and might require several efforts. In cases of intestinal obstruction in which carcinoma of the sigmoid was diagnosed or suspected as the cause he opened the abdomen by an incision through the middle of the lower part of the left rectus muscle. After establishing the presence of a growth and its operability, the condition of the intestine above, and especially the cæcum, was investigated. If the condition of the latter was good he made an artificial anus a few inches above the growth. If operable he excised it ten days or a fortnight later, together with the carcinoma and its lymphatic area, and re-established the continuity of the intestine. If care were taken to have the bowel well emptied and the skin cleansed in the "old-fashioned" way and compressed with 1 in 20 carbolic for half an hour before operation the risk of infection was slight. With large intestine completely covered by peritoneum, end-to-end anastomosis by suture had proved perfectly satisfactory in his hands. It was wise, however, to pass a tube down to its site for a few days, as with the most careful suturing, and even in the absence of any tension, some temporary leakage might ensue. When the growth was involving the upper part of the pelvic colon the anastomosis might have to be made to the iliac colon, and in this case and every case in which the peritoneal covering of the gut was incomplete, lateral anastomosis should be the method adopted. When the carcinoma affected the lowest part of the pelvic colon, anastomosis by invagination, as described by Lockhart Mummery in 1908 and by Balfour from Mayo's clinic in 1910 was the most satisfactory procedure. He had carried out two-stage operations on these lines in 8 cases with 1 death. This was due to acute intestinal obstruction, the result of a coil of small intestine becoming adherent to a bare area of peritoneum on the outer side of the anastomosis. This acted as a band under which another coil became strangulated. The patient was at that time apparently well, three weeks after the operation. In the first two cases of acute intestinal obstruction due to carcinoma of the pelvic colon that came under his care he carried out primary excision; both died. He had not used this method since. The after-history of the 7 survivors was as follows: 1 was alive and well 4½ years after operation; 1 died from recurrence in 4 years, after being in perfect health for 3½ years; 1 died from recurrence in 28 months, after 2 years of health; 1 after 2 years of health showed signs of recurrence; 1 died from recurrence in 19 months, remaining well for 15 months; 1 from recurrence at 9 months; and 1 from recurrence at 7 months. Inguinal colostomy in inoperable cases rendered life more tolerable. In some cases the quality of life remaining was good, and was certainly prolonged in comfort. Colostomy was carried out in 20 cases of carcinoma of the pelvic colon, the left iliac operation in all except two. The remainder were complicated by general diffusion or abscess, rendering any operative relief impossible. Six died within a few days of the operation. He had been able to trace the following: 1 alive and well 6 years after; others at 12, 10, 5 months; the remainder died—1 at 2 years, 1 at 12 months, 2 at 10, 2 at 9, and another at 4 months after operation. He had operated upon 5 cases of carcinoma of the descending colon, in only one of which was acute obstruction present. The operation to be carried out in the presence of obstruction, the result of growth in this situation, would depend on the condition of the intestine above. Where this was obviously acute, transverse colostomy should be carried out. This necessitated a three-stage operation in the event of the tumour being removable. In cases of chronic obstruction lateral anastomosis of the transverse colon to colon well below the growth was the wiser course. This he carried out in two cases in which the tumour was too far advanced for excision. One was alive and apparently well nearly three years afterwards, the other lived for three months. In two cases six and two months ago he successfully carried out primary resection, restoring continuity by lateral anastomosis. His present practice in the treatment of carcinoma of the pelvic and descending colon might be summed up shortly: in all cases of acute obstruction, no matter if the tumour be easily removable, colostomy should be carried out—left iliac if the growth be in the pelvic colon, transverse if in the descending colon. In resection the lymphatic area draining the affected gut should be removed, continuity established by end-to-end suture if the gut had a complete peritoneal covering, by lateral anastomosis if incomplete, sufficient room being obtained by mobilisation.

Mr. E. M. CORNER, speaking of tumours of the transverse colon, said that no surgeon had an extensive experience of them on account of their relative infrequency, and because in the great majority of instances the surgeon was operating to relieve intestinal obstruction primarily, and found the carcinoma secondarily. Their relative importance was shown in the figures of the incidence of carcinomata in different parts of the abdominal colon—i.e., exclusive of the rectum. The figures had been gleaned from the records of St. Thomas's Hospital as contained in the St. Thomas's Hospital Reports for 1900–1911 inclusive: Carcinoma of the cæcum, 20 per cent.; carcinoma of the ascending colon, 10 per cent.; carcinoma of the hepatic flexure of the colon, 4 per cent.; carcinoma of the transverse colon, 18 per cent.; carcinoma of the splenic flexure of the colon, 2 per cent.; carcinoma of the descending colon, 6 per cent.; and carcinoma of iliac and pelvic colon, 40 per cent. Carcinomata of the colon were most frequent in the iliac and pelvic colon, then in the cæcum, and then in the transverse colon. In all other situations they were relatively infrequent. Carcinoma was more frequent where the "foodstuffs" remained and paused in their passage through the intestine than where they were in motion. Its incidence was more common in the colon on the right (hepatic) side than in the colon on the left—i.e., more common where the bowel contents travelled against gravity, and therefore more slowly than where they moved assisted by gravity. Of these carcinomata some remained quiet and produced no symptoms or signs until they were very far advanced. Others caused intestinal obstruction quite early in their course. In consequence, carcinomata in the various regions of the alimentary canal possessed various relationships to the clinical symptoms which might arise, such as acute intestinal obstruction. In other words, carcinomata in the different regions of the colon showed different pathological and clinical characters. In his most interesting address at Aberdeen their President, Sir John Bland-Sutton, said that surgeons tended to be of two kinds—technicians or craftsmen who improve the art of their profession, and biologists who improve the science of their profession.[2] It might be added that the value of the work of both had to be brought before and estimated by the clinicians. Hence he would suggest that the greatest and most important group of surgeons was the clinical, as they had to appraise the work of all other departments. To appraise the value of the pathological knowledge of the incidence of carcinomata of the large intestine obtained, as above, from the pathologist, an inquiry was made as to their relative importance in causing acute intestinal obstruction. The incidence of obstruction was as follows: Carcinomata of the cæcum, 4·1 per cent.; carcinomata of the ascending colon, 0·7 per cent.; carcinomata of the hepatic flexure of the colon, 2·5 per cent.; carcinomata of the transverse colon, 13·4 per cent.; carcinomata of the splenic flexure of the colon, 17·4 per cent.; carcinomata of the descending colon, 5·1 per cent.; and carcinomata of the iliac and pelvic colon, 59·8 per cent. These figures showed that: 1. Carcinomata of the cæcum, and still more carcinomata of the ascending colon, did not seem to obstruct the intestinal flow. The growths tended to be lateral and local in the gut wall, like carcinomata of the rectum; hence they did not obstruct the flow within the bowel as did a ring growth. 2. Carcinomata of the iliac and pelvic colon, splenic flexure, and transverse colon were quite different in their clinical behaviour, causing intestinal

[2] THE LANCET, August 1st, 1914, p. 293.

obstruction early in their course. 3. Carcinomata of the splenic flexure were infrequent, but practically always caused intestinal obstruction. Carcinomata of the hepatic flexure showed the same feature to a much less marked degree. Since many regarded the whole of the large intestine as an anatomical unity it might be as well to include amongst the carcinomata those of the rectum in the statistics showing the relative importance of the carcinomata of the large intestine in causing acute intestinal obstruction. Including these the figures were: Carcinoma of the cæcum, 3·3 per cent.; carcinoma of the ascending colon, 0·2 per cent.; carcinoma of the hepatic flexure of the colon, 1·7 per cent.; carcinoma of the transverse colon, 11 per cent.; carcinoma of the splenic flexure of the colon, 14·3 per cent.; carcinoma of the descending colon, 4 per cent.; carcinoma of the iliac and pelvic colon, 47 per cent.; and carcinoma of the rectum, 18·5 per cent. It would be seen that the asymmetrical and "lumpy," as contrasted with the symmetrical and annular, carcinomata of the right-sided segment of the colon were the least liable to cause acute intestinal obstruction. This clinical condition increased in frequency when the growth was in the transverse colon, at the splenic flexure, to reach its maximum clinical incidence in the iliac and pelvic colon, where it took the form of a ring-like band (from the disposition of the lymphatics) constricting the bowel. In the rectum, again, the growth was "lumpy" and asymmetrical in its disposition. It would be seen that, looked at from all points of view, carcinomata of the transverse colon occupied both pathologically and, to a less degree, clinically an intermediate position between cæcal and sigmoid carcinomata; whilst in cases of acute intestinal obstruction where the situation of the cause could not be ascertained, the preponderance of the left-sided causes over those on the right side suggested the very practical point of opening the abdomen through the left rectus muscle. Clinically carcinomata of the transverse colon exhibit these characteristics: the absence of warning to the patient, the unannounced onset of acute intestinal obstruction, and the presence of a small annular growth. Hence, when it came to treatment the surgeon had two things to attend to—intestinal obstruction primarily and a carcinoma of the transverse colon secondarily. The former was a condition in which myriads of micro-organisms abounded. The organisms were responsible for many and much of surgical failures in the removal of growths from the colon. Hence he would urge that the surgeon was very unsound who attempted to do constructive work—e.g., the plastic work of an anastomosis in the face of this sepsis. Therefore, when any degree of acute intestinal obstruction was present, a temporary colostomy alone should be done. The artificial anus and the growth should be removed about a fortnight or three weeks later, the ends of the resected bowel sutured and closed, and the cæcum anastomosed to the sigmoid. It was noteworthy that it was strongly advised that the surgeon should do nothing, not even the removal of the growth, but relieve the intestinal obstruction. In the speaker's experience patients so treated did better in both their early and late clinical post-operative stages than if the growth was removed and Paul's tubes inserted. It was far better to leave the reaction of the growth until the time of the anastomosis. An inflamed growth was far more likely to lead to trouble if any attempt was made to remove it than was an uninflamed growth. This remark applied both to near and remote consequences. Thus he did not like "playing" with inflamed growths any more than he liked "playing with fire." The best work was usually done with cool materials. From time to time carcinomata of the transverse colon were large, and their removal might require a partial resection of the stomach, or they might become adherent to the umbilicus and discharge through it. But these features were unusual, and need not be introduced into a discussion on general principles. In practical surgical work they were far most likely to be called upon to relieve the intestinal obstruction caused by a carcinoma of the colon. Having done this it might have to be decided how to resect this carcinoma. The anastomosis might be made local to the excised carcinoma when possible, and there might be an oblique or circular enterorrhaphy. If, as was the usual case, the excision of the artificial anus and the growth left too little transverse colon behind to allow of an end-to-end anastomosis being done he believed the best proceeding was to close the ends of the bowel, cut off the caput coli with the appendix, and anastomose by implanting the cæcum into the upper rectum or sigmoid. This anastomosis had the advantages of keeping the "second stomach"—the cæcum and ascending colon, so that less food escaped absorption than if these structures were removed; the appendix, always abnormal in these cases, was removed, and the anastomosis, though made far from the growth, was yet conservative. With regard to proceeding to radical measures in the excision of the growth his advice would be: "Never try radical measures on an inflamed growth when they can be avoided. Do not be deterred by the presence of enlarged glands as many are inflammatory, but beware of intraperitoneal adhesions." In other words, the surgeon need not be put off by extraperitoneal inflammation, but he should be easily stayed by intraperitoneal inflammation. There was no doubt about the attempt at the spontaneous cure of the carcinoma by the production of contracting scar tissue by the inflammation of the contiguous structures. It was the contraction of this non-carcinomatous tissue which produced the intestinal obstruction in ring carcinomata—not the carcinoma as in the cæcum and rectum. Hence ring-carcinomata were more amenable to operation and gave better results from operation than did local and lumpy carcinomata. Hence he would make the statement that the results from the judicious resection of the ring carcinomata of the transverse, iliac, and pelvic colon gave better results than did resections for asymmetrical carcinomata of the cæcum and rectum. To demonstrate this it was practically always necessary to do the operation in two stages, and patients did not always like this procedure. Firstly, one should do a colostomy, relieve any obstruction, and make the tissues less septic; secondly, resect the growth, anastomose, and close the colostomy. In conclusion, he must say that he regarded a transverse colostomy as only a temporary measure. Colostomies had in general to be where the disposition of troubles put them. Inguinal colostomy was the form for choice. In general its results were better, more certain, and its performance easier, and it left a longer piece of colon for absorption. Colostomies were often olfactorily unpleasant, and something must be left to the choice of the patient. The transverse colostomy was apt to be more obtrusive. Mr. Corner said he had now in hospital a poor woman with a transverse colostomy who had a large prolapse of the mucous membrane from the bowel between the colostomy and the spleen; an ascending prolapse—a condition unknown in inguinal colostomy. And it was a matter of taste whether the patient preferred to have fæces in his umbilicus or in his pubic hairs. But putting aside all æsthetic considerations, on surgical grounds he thought the inguinal form of colostomy the better. A transverse colostomy had a secondary and distinct rôle in surgery.

Mr. H. W. CARSON said that the following was a summary of his last 20 cases of tumour of the colon: 1 case of actinomycosis of the cæcum, 1 case of ileocæcal tuberculosis, 4 cases of growth of ascending colon (malignant), 1 case of growth of splenic flexure (malignant), 3 cases of growth of descending colon (1 innocent, 2 malignant), and 10 cases of growth of sigmoid flexure (pelvic colon). He had brought two specimens of growths of the ascending colon for which he had done extensive resections, and their microscopical slides, which were interesting owing to their diverse characters. Both occupied practically the same site—i.e., within an inch of the ileocæcal valve; both were large growths with ulcerated nodular surfaces; both were malignant, but one was a spheroidal-celled medullary carcinoma and the other was a typical columnar-celled carcinoma. Of the two he believed it was agreed that the former was the more rapidly growing and had a worse prognosis. Clinically, these growths were quite different in their course from growths of the colon at and below the splenic flexure. They formed large masses, giving rise to tumours which were nearly always palpable and sometimes visible; there was a comparatively long history of intestinal discomfort—e.g., pain, diarrhœa, blood in the stools—and they rarely gave rise to obstruction. Comparing this with the history of growths of the left colon, of the 13 malignant cases in his list 6 had acute obstruction as the first sign, 3 had acute obstruction following a history of intestinal discomfort, 1 had chronic obstruction, and only 3 were free from obstruction when they came under his notice. None had diarrhœa or blood in the stools, 4 had

had pain and 5 had had long-standing constipation. It was this risk of obstruction which led to the heavy death-rate, for he found that of the 9 cases where acute obstruction had occurred 6 died shortly after operation. He had no doubt that many cases in whom obstruction seemed to be the first sign had had premonitory symptoms such as abdominal pain, irregularity of the bowels, or flatulent distension, and there was much to be done to educate the public to the necessity for seeking advice when these symptoms occurred in late middle life. With regard to treatment he said that it was generally agreed that in acute obstruction no attempt should be made immediately to restore the continuity of the bowel. The methods of relieving the obstruction varied between a cæcostomy, a colostomy (transverse or descending), and the excision of the growth with the formation of an artificial anus. Of these methods he was in favour of the last if the growth was found to be free of adhesions. If there was any difficulty in delivering the growth through the wound he preferred a colostomy in the neighbourhood of the growth rather than at a distance, as this prevented stasis in the intestine between the opening and the growth which might keep up the toxæmia. The subsequent operation of excision should be done at the earliest in three weeks. He was not satisfied that even if there was no absolute obstruction it was safe to do an immediate anastomosis of colon to colon. In the ascending colon the conditions were absolutely different. Obstruction was rare and anastomosis was made between the ileum, which was rarely injured, and a healthy portion of colon well beyond the disease. It remained to decide upon the best course to adopt. If the growth was inoperable a short-circuiting operation should be done. If the growth was operable it should be removed, and the important point to settle was the necessity of removing the glands which might be most implicated at the highest point—namely, near the origin of the ileo-colic artery from the superior mesenteric. It was probably best to start the operation at this point, tying the ileo-colic artery near its origin after dividing the transverse colon at the selected spot, and removing the whole chain of glands as they lay on the ileo-colic and right colic vessels. The ileum should be divided at least six inches from the ileo-cæcal valve and a lateral anastomosis done between the ileum and the transverse colon after closing both ends. The re-peritonisation of the raw surface left after the removal of the ascending colon was very important.

Mr. G. E. GASK raised the question as to what should be done in cases of acute obstruction. He put in a plea for short-circuiting rather than colostomy. It was more pleasant and if a further operation was advisable an anastomosis had already been obtained. The mortality of the conditions under discussion was very high, and this was due, he thought, to sepsis, already present in the bowel. The peritonitis following operation was due to infection on opening the bowel. No satisfactory operation had been devised by which a bowel could be opened which was free from danger by sepsis. He favoured lateral anastomosis rather than the end-to-end method, after excision of the growth.

Mr. F. SWINFORD EDWARDS agreed that growths of the large intestine were not highly malignant. He used end-to-end anastomosis and always left in a drainage tube for a few days. After excision of malignant growth in the pelvic colon there was considerable danger of stenosis. This he treated by a large Kelly's tube. He had found the sigmoidoscope of great value in the diagnosis of growths in the pelvic colon. He had abandoned inguinal colostomy in favour of hypogastric colostomy through the rectus.

Dr. HERBERT FRENCH spoke of the difficulty of diagnosis and of the possibility of obtaining aid from bismuth meals or enemata, from sigmoidoscopy, and from chemical examination of the fæces for occult blood or other bodies. Was wasting in a patient with suggestive symptoms a clear indication of the need for operation?

The PRESIDENT also agreed that such growths were often very slow in growth. He had seen more than one case where a secondary growth in bone had been operated upon on the supposition that it was primary. By microscopical examination it had proved to consist of columnar cells and secondary to growth in the bowel. Only after watching the patient for some months did symptoms arise pointing to the original lesion. This showed how insidious such growths were. He had also followed up cases five, seven, and nine years after colostomy had been done, and the growth had been shown to be carcinomatous microscopically. It was sometimes difficult even at the operation to be sure that malignant growth was present and to distinguish it from conditions which resembled it, like hyperplastic tuberculosis and actinomycosis. There was, therefore, plenty of excuse for the medical attendant who had not this help. If he performed a transverse colostomy he always removed the navel at the same time.

Mr. CORNER, Mr. SHERREN, and Mr. WARING replied.

BRADFORD MEDICO-CHIRURGICAL SOCIETY.—The opening meeting of this society was held on Oct. 20th. Dr. A. Manknell delivered the presidential address on Vaccination. After thanking the members of the society for electing him to the chair, Dr. Manknell said he hoped to refresh their memories on the subject of vaccination. Jenner's wonderful discovery had had far-reaching effects in its influence on the course of science and in the development of vaccine treatment, which had so largely bulked in their minds during the last ten years. After tracing the history of small-pox from the earliest times, Dr. Manknell then went on to show by means of statistics how it became apparent that revaccination was necessary. The pathology of small-pox was then discussed in detail, and statistics were given showing the influence of vaccination upon the severity of the attacks, the modification of the disease, and the alteration of the age-incidence. As regards the last, before vaccination small-pox was a disease of infancy. Vaccination had raised the age-incidence in two ways: 1. By reducing the number of persons in any given population who are susceptible to small-pox it reduces the chances of epidemics and lengthens the interval between them. 2. By rendering those once vaccinated insusceptible to small-pox for a period of years it raises the age-incidence in such to a higher range than among the unvaccinated. The influence of vaccination upon the fatality of small-pox was also shown in a marked degree by numerous figures, and Dr. Manknell laid particular stress on the fact that insufficient vaccination is a great evil, statistics showing that in patients with only one scar the ravage of the disease is infinitely more severe than in those patients with three or four scars. As instancing the value of revaccination, Dr. Manknell quoted the continental armies and gave striking figures. The influence of sanitation on small-pox was then discussed in full.—The meeting closed with a vote of thanks to the President for his address.

ULSTER MEDICAL SOCIETY.—The opening meeting of this society was held in the Medical Institute, Belfast, on Oct. 29th. The retiring President, Mr. A. B. Mitchell, having, in a valedictory address, thanked the Fellows and Members, and especially the honorary secretary, Mr. S. T. Irwin, for the help and support they had extended to him during the past session, in very suitable terms, introduced his successor, Dr. J. S. Morrow, who gave an introductory address on Disease in its Medico-Legal Relation to Accident. From his extensive practical experience as medico-legal adviser to the great shipbuilding yard of Harland and Wolff and other shipbuilding companies and insurance societies, Dr. Morrow was able to bring forward unique examples of cases in which disease existing before or occurring after an accident led to litigation requiring the most careful diagnosis and medico-legal management. It is to be hoped such a useful discussion of some of the most difficult medico-legal questions will be published in full. On the motion of Sir John Byers, seconded by Professor T. Sinclair, a vote of thanks was accorded to Dr. Morrow and to Mr. Mitchell. Copies of the Transactions of the Ulster Medical Society for session 1913–14, which constitute a large volume, were distributed at the meeting. It has been decided that in the present troubled times the annual dinner of the society is to be postponed.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—A clinical meeting of this society will be held to-day, Friday, Nov. 6th, in the society's rooms, West London Hospital, Hammersmith, W. Cases will be shown at 8 P.M., and the chair will be taken at 9 o'clock.

Reviews and Notices of Books.

A System of Clinical Medicine dealing with the Diagnosis, Prognosis, and Treatment of Disease, for Students and Practitioners.

By THOMAS DIXON SAVILL, M.D. Lond. Fourth edition. London: Edward Arnold. 1914. Pp. xxviii. + 948. With 4 coloured plates and 120 figures. Price 25*s.* net.

THE fourth edition of the late Dr. Savill's well-known text-book of medicine has been thoroughly revised and brought up to date by his widow, with the assistance of various experts in several of its departments. Dr. Savill's original object in writing the book was the production of a volume in which medicine should be considered from the point of view of symptomatology. As he pointed out, practical experience shows that patients seek medical advice because they have some morbid symptom to complain of; accordingly he began his descriptions of the various diseases by an account of the symptoms to which they give rise. Next, he devoted great attention to the diagnosis, so that the book might serve the purposes of a clinical index of diseases, and he laid great stress on the clinical advantages of the habit of passing in rapid review all the possible diseases that might account for a patient's leading symptom.

It is needless to say that Dr. Savill's plan of campaign is one of the greatest difficulty, as compared with the method of regarding diseases as separate entities which has almost invariably been adopted by the writers of medical text-books. Yet there can be no doubt that he executed his plan with great skill and attained a large measure of success, neglecting nothing in the way of etiology, pathology, and treatment to make his work complete. Important diseases are indicated by the use of large type, rarities are described in smaller type, and abundant cross references are given to avoid repetition and increase the utility of the book.

The editor's work has been done with skill and thoroughness; there is an excellent index. The volume contains an immense amount of information, and may be warmly recommended to senior students and practitioners of medicine on the look out for a sound summary of clinical diagnosis.

Gunshot Injuries: How they are Inflicted, their Complications and Treatment.

By Colonel LOUIS A. LAGARDE, United States Army Medical Corps (retired). London: John Bale, Sons, and Danielsson, Limited. 1914. Pp. 398. Price 18*s.* net.

THE writer of this treatise speaks with authority on the subject, having lately been commandant and professor of military surgery in the United States Army Medical School, as well as professor of the same subject in the University of New York. The results of the experience of army surgeons in the Spanish-American, Boer, Russo-Japanese, and Balkan wars have been compared with those in pre-antiseptic times, the characteristic features of the injuries produced by modern high velocity projectiles from small calibre rifles being dealt with in careful detail. The first five chapters treat of gunshot wounds in general, their characteristic lesions, symptoms and treatment. The next seven deal more particularly with injuries of the head, spine, chest, abdomen, blood-vessels, joints, and long bones seriatim. The medico-legal aspect of such wounds, and the application of X ray apparatus in the field are considered briefly in conclusion.

The rifle in use at the present time by the United States Army weighs 9½ lb. and measures 24 inches in the barrel. The bullet (modified in 1906) weighs 150 grains, and is 1·08 inch long; the powder charge is 48 grains. The striking energy of the bullet is 2400 foot pounds, the muzzle velocity 2700 feet per second, and the extreme range of the rifle 4891 yards. It is sighted for 2850 yards. With this rifle used as a single loader 23 aimed shots have been fired in one minute; using magazine fire 40 shots in a minute have been fired from the hip without aim. The 1906 model bullet now in use has a length of 1·095 inch, and a maximum diameter of 0·3085 inch, weighing 150 grains; it is of lead, with 3·3 per cent. of tin, enclosed in a cupro-nickel jacket. It is claimed that the present weapon is the most accurate rifle in the world. "With a high muzzle velocity and a flat trajectory little remains to be desired, unless the trajectory can be further lowered, and the continuous danger space for a height of 68 inches extended from the present range of 730 yards to a range of 1000 yards."

With regard to the observations and experiments made as to the effects of bullet wounds on cadavers, Colonel Lagarde goes into considerable detail. He believes that the experimental procedure of firing into cadavers, animals, and inanimate matter is the best way to ascertain the effects of projectiles on tissues, at any rate in peace. As to shell wounds, it is mentioned that one of the chief menaces in naval warfare to-day will be poisoning from powder gases arising from bursting shells. Surgeon-General Stokes has described two types, one resembling gas poisoning, the other irritative in its effects.

The extreme importance of infection in gunshot wounds is dealt with in the fourth chapter. After referring to the experiences of the great Civil War, and Weir's admission that the surgeons were more fatal to those under their care than the battle—"death followed the path of the surgeon, with his poisonous technique and dressings"—the author shows the regular decrease that has occurred in mortality from wounds in successive campaigns, the figures referring to the cases that "reached the hospital." In the Civil War the mortality was 14·3 per cent., in the Spanish-American war 6·0, in the Boer war 8·0, in the Russo-Japanese war 5·8 (Japanese) and 3·4 (Russian). "Antisepsis and the use of projectiles of the reduced calibre rifle have combined to bring about marked beneficence in the war wounds of modern times." To take gunshot injury of the knee-joint as an example: in the Civil War the mortality from this injury was 53·7 per cent., and of the rest none returned fit for duty, as all who recovered had suffered amputation. With antiseptic treatment in the Russo-Turkish war, 1877–78, the mortality was 11·1 per cent., but no cases returned fit for duty; in the period 1898–1902, the United States Army statistics (76 cases) gave a mortality of only 6·5 per cent., and 39·4 per cent. returned fit for duty; finally, in the Santiago campaign of 1898, the injuries resulting from small calibre missiles, of 17 cases the whole recovered, and 81 per cent. returned fit for duty. This excellent result was due partly to the humane features of the reduced calibre bullet, partly to the

use of antisepsis. The various theories that have been suggested to account for the so-called explosive effects of modern projectiles are considered. High velocity is the most potent factor, and the true cause of these explosive effects is "the transfer of energy from the bullet to particles of its own composition when it disintegrates, as well as to spiculæ of bone, or particles of fluid, or soft tissues." The treatment of the various kinds of wounds from gunshot is discussed fully according to the regions affected.

The illustrations are numerous and excellent, and the directions are clear and precise. The manual is to be thoroughly recommended.

The Story of Bethlehem Hospital from its Foundation in 1247.

By EDWARD GEOFFREY O'DONOGHUE. London: T. Fisher Unwin. 1914. Pp. 427. Price 15*s.* net.

FOR upwards of 650 years the Hospital of St. Mary of Bethlehem has, in the words of the founder's deed poll, ministered to "the benefit in manifold ways of the City of London," and since 1377 more particularly by caring for those stricken in mind. Ever since the year 330 there had existed at Bethlehem the Church of the Nativity, built and dedicated by Constantine, and in the year 1247 Simon FitzMary, an alderman of London, gave all his lands in the parish of St. Botolph without Bishopsgate for the foundation of a priory with a prior, canons, brothers, and sisters, which priory was to be a daughter house of the mother church at Bethlehem, was to receive the Bishop of Bethlehem and the other clergy of that house whensoever they should come, and besides this duty should celebrate divine services for the souls of sundry persons mentioned by the founder, and in addition for all the souls of the faithful departed. The rule followed was that of the Augustinians.

The priory apparently met with misfortune, for in 1346 the master and brethren petitioned that it might be received under the protection and patronage of the City. They had, says the petition, suffered from "losses, damage to property, acts of violence, oppression, extortion, and danger of death; from reviling, scandal, and their own dissensions." On Oct. 15th the City took the house and order under its protection, and the institution seems to have enjoyed quiet until 1375, when Edward III. seized it as an alien priory. What happened then is uncertain, but in 1377 certain lunatic patients were removed from "The Stone House" at Charing Cross to the Hospital of St. Mary of Bethlehem, so evidently the hospital was able to continue some at least of its work.

Between 1388 and 1403 the hospital had a porter, one Peter Taverner, who was also the treasurer, and who seems to have been a knave of the first water. In 1403 the hospital also had under care six male lunatics, with material for their safe keeping—to wit, 4 pair of manacles, 11 chains of iron, 6 locks and keys, and 2 pair of stocks. The graceless Peter, besides diverting the subscriptions of the charitable to his own use, was charged with stealing a number of blankets, sheets, and mattresses, and in addition the aforesaid chains, manacles, and locks. He was eventually fined £100, which he does not seem to have paid, and was also removed from his post. The hospital continued to run the not unusual career of scandals, commissions of inquiry, reformation, further scandals, more commissions. In 1457 John Arundell, chaplain and physician to Henry VI., was appointed Master, and about 70 years later—namely, in 1529—a man of a very different stamp, George Boleyn, obtained the post. At the great spoliation Bethlehem, together with St. Bartholomew's Hospital, was grudgingly granted to the City. In 1619 another physician was elected Keeper or Master, Hilkiah Crooke, a not very reputable personage, who was eventually dismissed his post and called upon by the College of Physicians to resign his Fellowship.

The Great Fire spared the hospital, but by 1674 the buildings had become so ruinous that it was decided to remove and rebuild it on another site. This site was in Moorfields, and the architect chosen was Robert Hooke, best known as a natural philosopher. But he was also a great architect, as his building for the second Bethlehem Hospital shows. The main building was finished in 1676. This is the "Bedlam" which figures so prominently in seventeenth and eighteenth century literature and in Hogarth's pictures, and one of the most remarkable figures of the hospital during this stage of its career was Dr. Edward Tyson, physician from 1684 to 1708. He was one of the earliest to institute a system of "after-care," but even his efforts could not prevent the disgraceful scenes in Bedlam on public holidays when the unfortunate inmates were made a show and a mockery; and it was not until 1770 that it was ordered that admittance should be by ticket only, and that accredited visitors should be accompanied by keepers or nurses. By 1800 Hooke's beautiful building, owing to insecure foundations and the tampering with the brick piers of the basement for purposes of increased storage, was in a very alarming condition, and it was decided to rebuild the hospital elsewhere. A site was chosen in St. George's Fields, and the new buildings were begun in 1812 and opened for patients in 1815. The architect appears to have been E. John Gandy, though his plans were altered by James Lewis, the surveyor. At this date the treatment of insanity began to be studied in a more gentle and reasonable spirit, owing in great measure to the interest aroused in the subject by the insanity of George III. Tuke in England and Pinel in France had been for some time experimenting in treatment without coercion. In 1837 the Charity Commissioners inspected Bethlehem, and on June 28th, 1851, the Commissioners in Lunacy made the first of their periodical inspections. That year, too, Dr. W. C. Hood was elected resident physician and lit the light of progress which has ever burned more brightly; not only metaphorically did he throw light on dark places but literally, for it was he who did away with the heavy iron gratings to the windows.

So we leave Mr. O'Donoghue's most interesting record of an institution which has endured for nearly seven centuries. The arms of the hospital show in a way an epitome of its history, and in all points save one they are those originally designed; there we see the basket of bread in allusion to Bethlehem, "The House of Bread," and again the star. The third charge used to be a chalice with the Host issuing from it. By the middle of the seventeenth century the arms had apparently been forgotten, for the governors asked Sir William Dugdale on the point. He it was who provided them with the old arms except that a skull replaces the Host in the chalice, a curious alteration upon the meaning of which it is legitimate to speculate. Dugdale was no bitter Protestant, so the substitution cannot be a deliberate insult levelled at the

chief rite of Christianity. Did he wish to emphasise the fact so prominent in the history of spiritual conflicts that the attack of the powers of evil is most violent at the time of spiritual exaltation? Or, for Dugdale was an ardent antiquarian, was he thinking of the Pagan version of the Grail legend as found in the Mabinogion when Peredur was in the castle of the lame king and saw two maidens enter, "which had between them a large salver in which was a man's head, surrounded by a profusion of blood"? But whatever be the meaning of the change, Bethlehem Hospital is now in very truth a place where those troubled in mind receive the gentlest and most careful treatment.

Diagnostics of the Fundus Oculi.

By EDWARD L. OATMAN, M.D., Surgeon, Manhattan Eye, Ear, and Throat Hospital, &c. Comprising one volume of text, with 234 illustrations and 4 coloured plates, and two portfolios containing 79 stereograms and 8 diagnostic cards. Troy, New York: The Southworth Company. Pp. 303.

Dr. Oatman has attempted in these volumes a greater task than the title indicates. It is nothing less than an endeavour to write a treatise of ophthalmology on the basis of individual cases. Such a herculean task is foredoomed to failure, but it has been a brave fight against odds.

One volume is devoted to the text, two to stereograms. The latter are very beautiful, but they of course present only a false stereoscopic effect. We doubt if this method of reproduction has any advantage at all. With the ordinary ophthalmoscope the fundus is viewed with one eye only, and no stereoscopic effect is obtained. Why, therefore simulate such effect by artifice, since greater verisimilitude cannot thereby be obtained? If the drawings had been on a larger scale they would have been worthy rivals of the best to be found in any ophthalmoscopic atlas.

The text opens with an elementary chapter on the examination of the eye, and is followed by chapters on the normal fundus, congenital anomalies, affections of the choroid, sclerosis of the retinal vessels and retinal hæmorrhage, angiopathic retinitis, closure of the retinal vessels, detachment of the retina, degeneration of the retina, miscellaneous affections of the retina, optic neuritis and optic atrophy, myopia, glaucoma, and intraocular and orbital tumours. Whenever possible a stereogram is used as a peg upon which to hang an exhaustive account of each condition. So far as individual sections are concerned the descriptions are full, accurate, and well presented. Particular attention is devoted to pathology, of which Dr. Oatman is well known to be an ardent student. The photographs of pathological conditions are amongst the best which we have seen and have been beautifully reproduced. In many cases the records show evidence of original research and many more or less complete bibliographies of the literature are given.

The chief criticism to be advanced against the text is the inequality of the treatment of the subjects. Some of the accounts are exhaustive, others scanty, and lacunæ are not wanting. The fault is serious in a treatise intended for the use of students, who are thus liable to obtain a wrong perspective. Yet the work is well worthy of a place in every ophthalmological library and will often be referred to with profit by elementary and advanced students alike.

LIBRARY TABLE.

Atti del I° Congresso Italiano di Radiologia Medica. Pavia: Mattei and Co. 1914. Pp. 246.—We have received a copy of the Transactions of this Congress held at Milan in October, 1913, by the Italian Society of Medical Radiology. It contains the opening address of the President, Professor Augusto Righi, on the Nature of X Rays, in which he puts forward the theory that these rays are of the same nature as light rays, and hence are manifestations of electro-magnetic waves propagated in the ether. There are four important papers: one dealing with the practical application of high intensities of X rays, by Professor V. Maragliano, and another, by Dr. A. Busi, on X ray investigation of the skull, comprising fractures and the presence of foreign bodies, lesions secondary to changes in the interior, with special reference to enlargement of the pituitary body, of which he gives details of several interesting cases. These show that the various processes which produce more or less marked changes in the sella turcica are: (1) intracranial diseases which cause a gradual increase of pressure, such as cerebral tumours in general and chronic hydrocephalus; (2) supra- and intra-sellar tumours, comprising isolated chronic hydrocephalus of the third ventricle and chronic hydrops of the cisterna chiasmatis; (3) various diseases of the sphenoid and aneurysm of the internal carotid in the sigmoid groove; and (4) enlargements of the pituitary body. Other sections refer to changes in the skull in connexion with otology, ophthalmology, and odontology. Dr. P. Tandoja contributes a compendious paper on the radiology of the intestines, which should prove a valuable guide to those who make a special study of this branch of the subject. The appearances of the normal duodenum, small intestine, and colon are separately described and contrasted with the various pathological changes to which they are each subject. The last paper is devoted to Roentgen and radium therapy in gynæcology, by Professor M. Bertolotti. The publication concludes with 78 shorter communications on a variety of subjects, the last of pathetic interest, being an account of the necropsy performed on one of the most esteemed workers in this branch of science, Emilio Tiraboschi, who succumbed in December, 1912, to an aplastic form of pernicious anæmia caused by exposure to X rays, the destructive effect of which he had never protected himself against.

Lead Poisoning from the Industrial, Medical, and Social Points of View. By Sir THOMAS OLIVER, M.A., M.D. Glasg., F.R.C.P. Lond. London: H. K. Lewis. 1914. Pp. 294. Price 5s. net.—This little book contains the lectures delivered by the author at the Royal Institute of Public Health and treats of the various modes by which lead gains entrance into the human system, how its presence affects the organism, and how it may be got rid of. Notwithstanding the great extent to which lead is used in various industrial processes, a great reduction in its evil effects has been brought about by the inspection and regulations of the Home Office. Among the industrial processes especially dealt with are lead smelting, manufacture of red lead and white lead, china and earthenware and pottery, electrical accumulator works, printing and type-founding, plumbing, dyeing, glass-making, tinning, diamond cutting, and house painting. The modes of entrance of the poison, the onset of symptoms, the physical signs and other phenomena, and the special effects of

lead on vision and the nervous system, as well as its peculiar effects in the female and its effects on motherhood, are included, and the treatment, preventive and curative, is described. The book closes with the various factory and workshop orders relating to the subject that have been promulgated. There is an adequate index. The work will prove of service to those especially interested in the subject.

JOURNALS AND MAGAZINES.

The Journal of Physiology. Edited by J. N. LANGLEY, Sc.D., F.R.S. Vol. XLVIII., No. 5. September, 1914. Cambridge University Press. Pp. 357–464. Price 7*s.*—The Mechanical Factors which Determine the Output of the Ventricles, by S. W. Patterson and E. H. Starling. After an interesting and explanatory introduction the method used is described. Practically the preparation employed is the now well-known heart-lung preparation which was obtained from dogs weighing from 4 to 6 kilos. The authors find that: 1. The output of the heart is equal to and determined by the amount of blood flowing into the heart, and may be increased or diminished within very wide limits according to the inflow. 2. The maximum output may amount to three litres per minute for a heart of 56 grammes. 3. With a minimal inflow the venous pressure on the two sides of the heart may be zero, and with increasing inflow rises at first only slightly so long as the amount of blood flowing in is not more than sufficient to exert a minimal distension on the relaxing ventricles. 4. The greater the arterial resistance the higher will be the venous pressure for any given inflow. 5. The greater the arterial resistance the sooner will the inflow attain its optimum and the output its maximum. 6. If the inflow is maintained constant alteration of rate of heart-beat does not alter the output per minute. 7. The greater the pulse-rate the larger may be the venous inflow without raising venous pressure beyond the optimum. The maximum output therefore increases with increased rate of heart-beat. 8. The optimum venous pressure is the amount necessary to produce "maximal" dilatation of the heart during the period of diastole. The maximum size of the heart depends on its structural arrangements, and in the intact animal is determined by the pericardium. It probably represents the size beyond which the heart could not dilate without causing its muscle fibres to act at considerable mechanical disadvantage in raising intracardiac pressure. 9. With a constant inflow fatigue of the heart is shown by a rise of venous pressure accompanied by increased diastolic filling and mean volume of the heart, the outflow remaining constant. The statements as to venous pressure apply to both sides of the heart. When failure occurs under a maximal load either the right or the left side of the heart may fail before the other side.—The Time Relations of Acid Production in Muscle during Contraction, by H. E. Roaf. It is a well-known and long-established fact that muscular contraction causes a production of acid. The author placed small medusæ in sea water to which various indicators were added. The most successful indicator used was neutral red, in which the medusæ stain a faint pink. At each contraction of the muscular plate the colour became a deeper red and then faded again. We know that the lactic acid formed after contraction of a muscle is removed by some process requiring the presence of oxygen. The author describes his electrical method of measuring the change in hydroxyl ion concentration of muscle, for which reference may be made to the original paper. From a calculation of the time phases of the capillary electrometer used and other data the author concludes that his experiments favour the view that the increase in acidity is the cause of the shortening of muscle. Repeated stimuli lead to a fusion of electrometer curves due to increase in acidity before fusion of contractions occurs.—The Origin of the "C" Wave in the Jugular Pulse, by James M. McQueen and A. W. Falconer. The source of this wave has been in dispute. The authors agree with those who hold that it is of auricular origin, and not to the impact of the neighbouring carotid artery.—Myothermic Experiments in Salt Solutions in Relation to the Various Stages of a Muscular Contraction, by Viktor Weizsäcker. This paper is highly technical and of particular interest to physiologists. Broadly speaking, the author states that his results strengthen the theory of a chain of two different machines in muscle: (1) contraction-mechanism and (2) oxidative recovery mechanism.—Gaseous Exchange in the Decerebrate Animal, by Charles G. L. Wolf and T. S. Hele. A technical paper.—The Suprarenal Bodies and Diuresis, by Douglas V. Cow. It appears that different effects are produced by perfusing (*a*) directly through the renal arteries and (*b*) through the aorta of cats. Two sets of experiments were made, from which the author concludes that the suprarenal bodies are direct regulators of urinary activity.—The Temperature Coefficient of the Refractory Period in Nerve, by E. D. Adrian. This paper also is highly technical.

St. Mary's Hospital Gazette for October is a very interesting number. The words "War Number" in big red letters suggest its general scope. It contains an editorial note on St. Mary's and the war, from which we learn that St. Mary's men preside over half the base hospitals of London, and are represented on another. Captain W. H. Willcox, R.A.M.C. (T.F.), describes the Third London Base Hospital. Mr. Ernest Lane gives an account of the American Women's Hospital at Paignton, which on Sept. 27th received at 24 hours' notice 130 patients, mostly from Mons and Soissons, and further batches of 29 on Oct. 5th and 121 on Oct. 6th. The wounds were naturally for the most part septic on arrival, but as they were principally due to shrapnel the tracks were open, so that there was no pocketing of pus. Dr. A. Hope Gosse records the work done by the hospital yacht *Liberty*. Lieutenant W. D. Arthur writes from the forces in France, and says: "Five of our officers have gone to the front already, and of these two are killed and another *hors de combat*. These men were from our own hospital staff, civil surgeons like myself, and one of them a married man with three young children." There is also part of a letter from a late houseman at the front, who as medical officer attached to the Middlesex regiment finds his work "most congenial." There is an obituary notice of Lieutenant J. F. O'Connell, R.A.M.C., who was killed at the battle of the Aisne on Sept. 20th. The list of St. Mary's men and nurses serving in various capacities in connexion with the war occupies seven columns.

Proceedings of the Prehistoric Society of East Anglia, 1913–14. London: H. K. Lewis. Pp. 385–491. Price 3*s.* 6*d.* net; postage 3*d.*—Those who take a keen delight in digging out knowledge of the far-off ancestors of the human race by unearthing and observing and comparing their fossil remains, the implements of which they made use, and so forth (and obviously they include many medical men), will always find a fund of, to them, intensely interesting material in the "Proceedings of the Prehistoric Society of East Anglia." The issue now before us contains interesting papers on Flint Remains, by the President, Mr. J. Reid Moir, Mr. A. E. Peake, Mr. J. S. Warburton, Mr. W. G. Clarke, Mr. Alfred Schwartz, Mr. H. H. Halls, Colonel A. W. Jamieson, Mr. F. N. Haward, Mr. Reginald A. Smith, and Mr. Bellerby Lowerison. An Early Norfolk Trackway: the "Drove Road," forms the subject of a communication by Mr. W. G. Clarke and Mr. H. Dixon Hewitt. Mr. Miller Christy publishes a comment on the report of the committee on the "Red Cray Shell Portrait." Mr. Alfred Schwartz outlines a scheme for organised research on flint instruments. Mr. Walter Rye describes an East to West Trackway across Norfolk, and Lieutenant-Colonel W. Underwood gives a further review of recent advances in "palethnology." If we might venture a criticism, we would suggest to those who devote so much enthusiasm to digging out an interpretation of fossil and other remains not to go out of their way to throw unnecessary obstacles in the way of those who have to dig out the meaning of words from their component roots. The root of the Greek word for ancient is not "pal"—though the French still use *mon vieux* in a sense equivalent to my pal—but palai (Latin, palæ; bastard English, pale); consequently we suggest palæethnology.

WE have received from Mr. H. K. Lewis, of 136, Gower-street, London, a "List of Medical Journals" conveniently grouped under subjects, and giving the subscription rates. It should be of use to librarians, secretaries, and individual medical men and specialists seeking information respecting periodical publications. It should be mentioned that the list was compiled and printed before the European crisis became acute, and notice is given that journals issued in "enemy" countries cannot be supplied until the war is over.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 7, 1914.

The Wounded in the War.

THE terrific fighting throughout the western area of the war, and especially in Flanders, where the Allied Forces are disputing successfully every inch of German advance along the Belgian coast of the Straits of Dover, has resulted in an appalling death-roll and in a commensurate number of wounded. Boulogne and Dieppe are towns of hospitals, and while as far as possible their accommodation is relieved by shipment to this country, the congestion still remains, with accompanying pressure upon all the arrangements for surgical treatment and for nursing. Nor is the evacuation of the wounded from these hospitals, or from similar institutions in close communication with the districts where the actual fighting is going on, a thing to be regarded complacently as an ideal course. A medical correspondent pointed out in the *Times* at the end of last week that while the stream of wounded into Boulogne continues, as it must continue, surplus cases will be shipped across the Channel with a rapidity which will not take sufficiently into regard the fitness of the patient to stand the prolonged journey. The circumstances have altered for the better, and the correspondent of the *Times* did not take into consideration the military exigencies of the situation, and was apparently unaware of the amount of provision for the care and accommodation of the wounded which was forthcoming. But the position of Boulogne is not quite comparable with that of other towns less immediately in the line of the direct and fierce German objective. There is great need for surgical assistance in the north of France. There is a shortage of hospital equipment in many of the towns whose position in the rear of the Allied Forces marks them out as natural places for the reception of the wounded, and though much has been done to remedy this, and though much is daily in the doing, the fact still remains that here especially, and also in many districts where the wounded have congregated, there is urgent need of surgical assistance. And there is great difficulty in providing it.

The difficulty is outlined in letters which we publish in our present issue from Sir VICTOR HORSLEY and Dr. JAMES DONELAN. There is in our country a large body of surgeons willing to proceed at once to France and to give their services at the places where they are most required, but who may not find it easy to make their proposals fit with the organisation which the Anglo-French committee of the British Red Cross has hitherto set in motion. We can quite understand that this should be so. The British Red Cross has a very high standard to maintain, and may feel that all movements towards flexibility, if taken under its ægis, are attended with a certain measure of risk to that standard. We have reason, however, to think that a policy more favourable to those who desire to give individual help will be pursued. There is considerable intercommunication with France now, and apart from the representatives of various journals, who are largely laymen, many medical men have been into France and have seen for themselves, or have learned from the lips of French colleagues, of existing needs that could be met, but which are not being met. There are plenty of British surgeons willing to go out to the assistance of the wounded in French hospitals, and a large array of French hospitals where their services would be of the first value; and all must agree that this supply and demand should be brought at once into proper relation, so long as the methods employed do not run counter to general military policy. Dr. DONELAN, who pointed out in our columns on Sept. 26th that there were French hospitals near the front where the services of British surgeons would be welcome, has received, we learn from his letter this week, many offers of assistance, and we are sure that, if the British Red Cross Society can help him to allot these volunteers to places where they are known to be wanting, much good will ensue.

We publish this week two communications which sufficiently account for the divergent opinions on the way in which the wounded are being treated in France. Our regular Paris Correspondent, who is now with the fighting forces in the southern area, tells distinctly how it has come about that elaborately planned machinery for the prompt and humane treatment of the wounded has been defeated by the unparalleled circumstances of the war. But he shows also that the French have risen to the unexpected conditions and are coping with them successfully. A correspondent from Chambéry shows well that at an important provincial centre the first effect of the war was to deprive the town of its complement of medical men who might have succoured the wounded, but he indicates that substitutes were found, and is able to report the resulting state of affairs as satisfactory. From both these letters written on the spot it would be possible to justify some of the trenchant things that have been said of the care of the wounded during the war, but from both it is also apparent that difficulties of the gravest sort have been triumphed over to a great extent.

Annotations.

"Ne quid nimis."

A MONTHLY RECORD OF ATMOSPHERIC POLLUTION.

WE publish this week a further record of atmospheric pollution as observed at 28 stations in the country. It will be seen that a wealth of valuable evidence is being accumulated which is bound to draw serious attention to an important gap in our sanitary organisation. The scheme has been well founded by the Committee for the Investigation of Atmospheric Pollution, which is responsible for obtaining regular monthly returns from the various observers. This committee will have the satisfaction of knowing, we hope in the not distant future, that when the consummation is reached, and the inexcusable pollution of the air by the smoke of our chimneys, domestic as well as industrial, is effectively suppressed, the spade work was theirs. We may, moreover, claim some share in initiating the movement, as in an annotation as far back as September, 1895, entitled "Is the Smoke Nuisances Act Properly Enforced?" we gave numerous examples of offences against the law. We suggested that the authorities should be roused to action in the matter and take immediate steps to bring to book any offenders, especially as they could avail themselves of simple means by which the production of objectionable smoke could be minimised. The Committee for the Investigation of Atmospheric Pollution are undertaking an important branch of sanitary service which should be widely appreciated.

THE DUCK AS A PREVENTER OF MALARIA AND YELLOW FEVER.

THE prevention of malaria and yellow fever by the use of animals which are the natural enemies of the mosquito does not seem to have received sufficient attention. Dr. S. G. Dixon, Commissioner of Health of the Commonwealth of Pennsylvania, has recently pointed out that the duck is one of the greatest enemies of the mosquito, and therefore can play an important part in the prevention of malaria and yellow fever. After trying the ability of fish to devour the larvæ and pupæ of mosquitoes with varied success he built two dams near one another on a stream, so that they gave exactly similar breeding grounds for mosquitoes. In one 20 mallard ducks were allowed to breed. The other was protected from water fowl, but well-stocked with gold-fish. The one remained for several months entirely free from mosquitoes, while the other swarmed with them in different cycles of life. To the infested pond ten well-fed mallard ducks were admitted. At first they were attracted by the tadpoles, but they soon noticed the larvæ and pupæ of the mosquitoes and ravenously devoured them in preference to any other food. After 24 hours no pupæ could be found, and after 48 hours only a few small larvæ. The motion of the water produced by the ducks of course drowned some of the insects, what proportion could not be estimated. For some years Dr. Dixon has been using ducks to keep down mosquitoes in swamps that would have been expensive to drain, but he never appreciated their efficiency until he made these experiments. In the work of Howard, Dyar, and Knab on "Mosquitoes of North and Central America and the West Indies" is an essay on the destruction of the mosquito and house-fly by Mr. W. Beutenmueller, who expresses the view that aquatic birds could be used for the purpose of destroying mosquito larvæ. Mr. W. Lockwood, of Boston, who has made a hobby of raising aquatic fowl, thinks that the spoon-billed duck is particularly adapted to the destruction of larvæ resting on the surface of water. While other birds, fish, spiders, batrachians, arthropods, and reptiles are all enemies of the mosquito, Dr. Dixon claims that none have the wide geographical range and the capacity of the duck for devouring large numbers of the larvæ and pupæ. Ducks can be used in ponds, swamps, both open and in jungles, and can be driven from place to place. We may point out that fish are being used for the destruction of mosquito larvæ with greater success than appears to have been obtained by Dr. Dixon. In Gambia a constant reserve of fish is maintained in some of the drains at the sea end, even in the dry season, and as required fish are transferred to other drains and private wells. More and more people are having their wells stocked with fish, and this measure proves more efficient than well covers, which must be frequently removed. Fish from the sea introduced into comparatively fresh water take some time to adapt themselves to it, but after a day or two become brisk and destroy larvæ with avidity. The number which can be destroyed is shown by the following sanitary report. A drain which had been dry for some time filled up to 90 yards from the sluice gate during high tides in April, the average depth being 4 inches. On April 23rd larvæ half-grown and over were present to the number of 2100. Eleven fish averaging 4 inches long and 5 averaging 2 inches, which had been kept some time in fresh water, were introduced at 11 A.M. Close inspection at 9 A.M. on the following morning did not show a single larva.

THE PHYSICAL SIGNS OF CARDIAC HYPERTROPHY.

IT has long been recognised that right or left-sided cardiac hypertrophy may occur; similarly, but with less clinical insistence, there may arise general cardiac hypertrophy. Right-sided hypertrophy is held to be strongly indicated when there is a well-marked epigastric pulsation, or on palpation a forcible thrust in this region; left-sided hypertrophy, on the other hand, is suggested by the presence of a local and forcible apex beat situated below and external to its normal position. These are commonly accepted clinical dicta. Later work has enabled both these clinical signs to be tested with a more searching accuracy in two ways. The form of the deflections of the string galvanometer applied to the heart (Einthoven) records, with proved efficiency, whether there is right or left-sided preponderance of ventricular action. In general these observations have borne out clinical findings; left-sided relative preponderance occurs with aortic disease (often) and interstitial nephritis; right-sided preponderance holds in most cases of mitral stenosis and in all cases of congenital pulmonary stenosis. Another method of checking clinical findings has been by careful post-mortem weighings of each ventricular mass. The technique is laborious, for the ordinary naked-eye estimations of supposed hypertrophy are wholly inadequate for accurate work. The correlation of these two methods with the clinical signs

has led to some important facts, recorded by Dr. Thomas Lewis in *Heart* (1914, v., 367). In the first place clinical signs alone, though useful, are not, in a moderate number of cases, truthful. The epigastric thrust, for instance, as investigated in 53 cases, is shown to be as marked when the right ventricle is normal as when enlarged (as tested by weighing); and, again, even the local apical impulse may be due, not to left, but right ventricular hypertrophy. Secondly, in considering special valvular or circulatory conditions, it is found that whilst in most cases of mitral stenosis right preponderance exists, left may also be met with, especially when there is coexisting raised arterial tension. In aortic disease left-sided hypertrophy may or may not be present, as shown both by weighing and by the electrocardiogram. In interstitial nephritis, with raised blood-pressure, left-sided preponderance was especially prominent. The ratio L:R which is normally 1·8 (though subject to wide variation in different healthy subjects) becomes, with raised arterial tension, 2·0 or over. Dr. Lewis adds some general observations upon hypertrophy. He emphasises the need for more accurate measurements. "That changes in the mechanical condition of the circulation are the sole or even the chief causes of hypertrophy has not been proved." In man, for example, with aortic disease the increased weight of the heart may be even 280 per cent. more than normal, a hypertrophy never attainable in analogous animal experiments. Some of the largest hearts, again, are due to causes unknown. Many hearts show general hypertrophy. Finally, contrary to what would be expected, raised arterial tension produces the greatest left-sided hypertrophy when associated with mitral stenosis, more even than when associated with either aortic disease or purely renal lesions. "Evidently," as the writer says, "before we can consider our knowledge of hypertrophy in relation to valvular or renal disease to be at all complete, the number of hypertrophied hearts studied must be multiplied."

INTRATRACHEAL ADMINISTRATION OF ETHER AND CHLOROFORM.

THAT there must be certain advantages inherent in the administration of anæsthetics through a tube passed down the trachea is obvious to all who have had practical experience of the extent to which mechanical obstruction in the upper air passages is responsible for difficulties arising during inhalation anæsthesia. All these difficulties, whether from engorgement of the tongue and fauces, from spasm of these parts and sucking back of the tongue, from glottic spasm, or from mucus accumulation, are completely obviated by intubating the trachea. That this is the case has been amply demonstrated not only by the quiet conditions witnessed in the laboratory where animals are habitually anæsthetised through a tracheotomy tube, but also by the many cases in which a human patient is similarly anæsthetised after a preliminary laryngotomy or tracheotomy, as in operations for the removal of the tongue. In these cases, although there is no intubation from above, yet the upper air passages are cut out of the inhalation region just as they are when the trachea is intubated, and with a similarly gratifying result as regards freedom from all obstructive difficulties. To gain these advantages by intubating the trachea there are, however, certain obstacles to be overcome, and it remains an open question whether for ordinary routine work the gain justifies the extra time, labour, and apparatus required. The first obstacle is to be found in the difficulty that often arises in passing a catheter down the trachea. This difficulty is well illustrated by some of the cases described in Mr. Rupert Jones's article, which appears in our columns this week (p. 1087). There it will be seen that in one case as much as 30 minutes was expended in attempts to catheterise the trachea; in other cases there was considerable difficulty; in one the feat was found impossible. These difficulties diminish, no doubt, to a large extent with extended practice, but they are to be reckoned with, and particularly as they arise in the very cases where tracheal insufflation is otherwise so advantageous—for example, in cases of goitre and of removal of the tongue for cancer. A scrutiny of Mr. Jones's cases, as well as experience with apparatus somewhat of the type that he employed, leads us also to the conclusion that besides much practice in passing the catheter there is necessary for complete success in this work an apparatus of considerable complexity. The apparatus must provide for a sufficiently strong vapour percentage of ether, and must work at least fairly silently and with perfect regularity, besides providing the right amount of pressure and warming for the vapour. This question of pressure leads to reflections upon a second article which we publish this week (p. 1085), in which a method is described for the intratracheal administration of chloroform. It must be remembered that there is a distinct difference between merely supplying a vapour for the lungs to inhale, as is commonly done, for instance, when chloroform is given from a Junker's inhaler into a tracheotomy tube, and pumping vapour into the lungs at a positive pressure. Now it is the former process which Mr. W. Dakin Mart imitates in his intubation apparatus, but it is the latter which is the essential feature of intratracheal insufflation, as practised by Dr. F. E. Shipway and others who are exponents of the method. Moreover, we must entertain grave doubts as to the wisdom of seeking to imitate with chloroform the process which is safely carried out with ether, even in spite of the immediate opportunity afforded for the very efficient application of artificial respiration. It is just because tracheal insufflation renders possible the use of ether in many severe cases which had hitherto to be managed with chloroform that this proceeding has become so valuable an adjunct to the more usual methods of anæsthesia. For extensive operations within the thorax and for many of the severe cases in which there is likelihood of free bleeding into the mouth and pharynx intratracheal insufflation supplies us with a most efficient procedure that discountenances to a large extent the dangers inherent in these operations when undertaken with the use of chloroform.

THE WIDENING FIELD OF PRACTICAL PSYCHIATRY.

PSYCHIATRY is both theoretical and applied. Practical psychiatry consists in the application of knowledge gained from the study of mental disease to the problems of its prevention and cure in the individual and in the community. We believe it is becoming increasingly evident that practical psychiatry is in reality concerned with a social problem, the solution of which demands organisation and methods that are essentially of a public or semi-public character. In days gone by the main object of practical psychiatry was the seclusion of the

individual no longer responsible for his actions; gradually it came to be recognised that in addition to caring for and feeding him definite medical treatment with a view to ultimate cure was an object worthy of attention, a goal worthy of aim; scientific study of the material proceeded *pari passu* with this adoption of modern therapeutic measures. Now, however, the time is ripe for further extension of the problem. It must be dealt with on still broader lines. Just as now the community as a whole is disposed to seek its own sanitary welfare, and to devote public funds to this end rather than depend upon private philanthropy, so the community is beginning to recognise that mental disease, as well as crime and poverty, must be dealt with socially—that is to say, that the attention hitherto more or less concentrated on institutional treatment must be directed also to the social conditions under which mental disorders arise. In an eloquent address by Dr. William L. Russell, superintendent of Bloomingdale Hospital, New York, to be found in the annual volume of *Transactions of the American Medico-psychological Association*, the importance of these developments and extensions in the treatment of the mentally afflicted is fully emphasised. In New York State earlier and better attention to this type of patient, both before and after institutional treatment, has resulted in definite gain to the individual. Instead of the relieving officers the medical officers of health are responsible for the handling of cases of mental disease. In the general hospitals of the large cities psychopathic departments and wards have been organised where prompt medical treatment may obviate any necessity of the patient's being transferred to an asylum. Mental out-patients' departments are found in many hospitals and dispensaries. The importance of domestic and social readjustment in most cases of mental disease cannot be over-estimated. Through the agency of what is called the social service department the domestic and personal difficulties under which the patients may labour are investigated and as far as possible compensated, and thus the application of what has been learned about the nature and causes of insanity is directed to its prevention. In this connexion we may call attention to a recently issued report of the work of the out-patient department of the new Henry Phipps Psychiatric Clinic at the Johns Hopkins Hospital in Baltimore. Dr. Macfie Campbell, who writes the report,[1] says that in nine months 543 patients presenting symptoms of mental disorder varying in type and degree have been examined. The cases have ranged from the subjects of definite organic brain disease to children with bad tempers. Dr. Campbell finds the work of his social service department invaluable, and a perusal of his report will go far to convince the reader of the bearing of practical psychiatry on many vital interests of the community. The scientific interest of the cases is of course considerable, but their treatment cannot be satisfactory unless and until it is recognised that the trouble for which the patient or his friends seek advice and relief is often what may be called a "disorder of adjustment." In a case of mental disease the primary disturbance may be at a level of the patient's activity little suspected, unless the whole matter of his environment is thoroughly gone into. In this way, as Dr. Campbell says, important social and educational issues are raised, and even where in the individual case little can be done the thorough study of the disorder in its complete setting may contribute data of value in relation to the mental hygiene of the community. This is the aspect of practical psychiatry that is bound, we feel sure, to impress itself more and more on the physician, and that the community as a whole will for its own sake sooner or later have to face.

[1] Johns Hopkins Hospital Bulletin, vol. xxv., No. 279, May, 1914.

THE HUNTERIAN SOCIETY AT THE BARBERS' HALL.

THE Worshipful Company of Barbers should possess more than ordinary interest for members of the medical profession, for in the year 1461 it was incorporated under a charter of Edward IV. with the right of its members to practise surgery, and what is said to be the first licence extant granted to any surgeon in England to practise surgery was given by it in 1492. In 1541 the Barber-Surgeons' Company was incorporated by Act of Parliament with the Company of Surgeons of London, a union which continued for upwards of 200 years.[1] When in 1745 the control of surgical practice in London and the education of practitioners with the accompanying endowments passed from the Company of Barber-Surgeons to the College of Surgeons of London (now the Royal College of Surgeons of England) the ancient Hall of the Barber-Surgeons in Monkwell-street remained, together with its contained records and art treasures, in the possession of the Worshipful Company of Barbers. Largely through the offices of Dr. Glover Lyon the Barbers' Company has now placed its handsome Council Chamber at the disposal of the Hunterian Society for its meetings, and it was there that on Oct. 28th Dr. Lyon delivered his presidential address before the Society. He gave an interesting account of the Barbers' Company and of its share in the evolution of the art and practice of surgery in England, and quoted from the old records many details illustrative of the punishment of quackery in the reign of Richard III., the state of surgery in the wars during Henry VIII.'s reign, the punishment for malpractice in 1635 (a case in which "Mr. Doctor Harvye," the discoverer of the circulation of the blood, figures as an "expert medical witness"), and of two cases of resuscitation after hanging, which occurred in the Hall respectively in the years 1587 and 1740. But the most interesting part of the address consisted in Dr. Lyon's description of, and comments on, the pictures and other objects of interest belonging to the Company, which were all exposed for the subsequent inspection of the visitors. Dr. Lyon paid a justly deserved tribute to the courtesy of the Company, which gladly affords opportunities of inspection to those who are likely to be appreciative of such antiquarian and artistic treasures. It is undoubtedly a great boon to lovers of such relics to examine the pictures at leisure away from the chilling atmosphere of a public gallery, and to handle the cups and other objects instead of merely gazing at them through glass covers. Not the least interesting of the exhibits was the original illuminated book of ordinances, which dates from the first half of the sixteenth century. Among the paintings are Holbein's celebrated picture of King

[1] For an admirable account of the relations of the Barbers' and the Surgeons' Companies see the address by Sir Rickman J. Godlee on the Origin and Growth of the Royal College of Surgeons of England in THE LANCET of Nov. 22nd, 1913, p. 1443.

Henry VIII. granting a charter to the Company in 1541, all the personages represented therein being celebrities. To three of them Dr. Lyon gave special mention—viz., John Chambers, Henry VIII.'s physician and Archdeacon of Bedford, one of the founders of the College of Physicians; Dr. Butts, mentioned by Shakespeare in *Henry VIII.*, who attended Anne Boleyn and was sent by the King to Wolsey after his disgrace; and Thomas Vicary, five times Master of the Company, serjeant-surgeon to Henry VIII., Edward VI., Mary, and Elizabeth, chief surgeon at St. Bartholomew's Hospital, and author of "The Englishman's Treasure," said to be the first work on surgery published in English. Other pictures were portraits of Sir Charles Scarborough, of Edward Arris, founder of the Arris lectures, Sir Charles Bernard, serjeant-surgeon to Queen Anne, and Sir John Tweedy, who has linked in his person for a time the two divided companies, having been Master of the Barbers' Company as well as President of the Royal College of Surgeons of England. The Company's plate includes the silver gilt cup presented to the Company by Henry VIII., a characteristically graceful tankard presented by Charles I., and an appropriately solid flagon presented by the Roundhead professor of surgery, Thomas Collins. Finally, there is the Boscobel cup presented by Charles II., which again is an example of grace and instability.

THE ACTION OF DRUGS ON PLANTS.[1]

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IN the scientific study of the effect of drugs we should aim to get at the very root of the matter, in discovering the fundamental reactions of drugs on the simplest protoplasmic mechanism of the plant, for it will be admitted that it is only by the study of the simpler phenomena of irritability in the vegetal organism that we can ever expect to elucidate the more complex physiological reactions in the animal tissues. In connexion with this I may cite one of our greatest living authorities, whose work has become classical. In his standard work on medicine Sir Lauder Brunton expresses his deliberate conviction that scientific investigations regarding the effects of various drugs on the animal could not be regarded as satisfactory until we succeeded in discovering their effects on living organisms as a whole, including the plant.

I shall first demonstrate the similar physiological characteristics in vegetal and animal organisms, and next speak of the effects of various stimulating and depressing agents, such as a constant electrical current, various drugs, narcotics, and poisons, on the contractile, the conducting, and the rhythmic tissues of the plant. It will further be shown how the normal effect of a drug on the plant is profoundly modified by two other factors. The first of these is the influence of dose or strength of appreciation. The second factor of modification is the change induced in the tissue by the cumulative action of stimulus, in consequence of which the response of the organism undergoes a complete cyclic change. Consideration of these questions will probably throw much light on various anomalies met with in medical practice.

Assuming that plant tissues respond to the characteristic action of different drugs, yet the physiological change induced will elude our visual scrutiny. To take an extreme case, we find that it is impossible by mere inspection to distinguish between plant specimens one of which is alive and the other killed. We have then to discover means by which the plant itself is made to reveal its internal condition, and changes in that condition by characteristic signals recorded by it. Our success in devising such a method will enable us to determine whether a given drug causes an excitatory or depressing effect on the plant.

Plant Script.

As regards the possibility of revealing internal changes in the plant the conceivable way of doing so is by the detection and record of the response of the organism to a definite testing shock. If we can find out in the plant the relation between the stimulus or response we shall be able to determine its state of vitality at the moment. In an excitable condition the feeblest stimulus will evoke an extraordinarily large response; in a depressed state even a strong stimulus will evoke only a feeble response; and at the onset of death there is an abrupt end of the power to answer at all. Thus by means of testing blows we are able to make the plant itself reveal those invisible internal changes which would otherwise have entirely escaped us. We may, as we shall see, employ different methods of recording the response of the plant. The most evident is the method in which the answer is given in the form of mechanical movement.

Mechanical Response of Plant.

At the point in the leaf of the so-called sensitive plant, Mimosa, there is a cushion-like mass of tissue known as pulvinus. Under excitation the parenchyma in the more excitable lower half of the pulvinus undergoes contraction, in consequence of which there is a fall of the leaf. The sudden movement constitutes the mechanical response of the leaf. By the invention of different types of recorders I have succeeded in making the plant itself write an answering script to a testing stimulus, and in order that the results obtained should not be influenced by any personal factor arrangements have been made that the plant attached to the recording apparatus should be automatically excited by a stimulus absolutely constant, should make its own responsive record, going through its own period of recovery, and repeating the same cycle over again without assistance at any point on the part of the observer.

Similarities of Mechanical Response of Plant and Animal.

In the response of animal tissue it is found that a single stimulus, by itself ineffective, becomes effective upon repetition. The same is found to be the case in plant tissue. Thus, in a particular experiment, while an electrical stimulus of intensity 0·1 was singly ineffective, it became effective after being repeated 20 times. It is found, moreover, that this additive effect is, within limits, strictly quantitative. As in the case of the animal tissue, so also in Mimosa, the response is abolished at a sufficiently low temperature. With rise of temperature the amplitude of response is increased and the period of recovery shortened. The effect of load on the response of Mimosa is similar to that on the contractile response of muscle. In both, under increasing load, the height of response undergoes a progressive diminution with shortening of the period of recovery. Within

[1] Abstract of a lecture delivered before the Royal Society of Medicine on Friday, Oct. 30th.

limits the amount of work performed by the muscle increases with the load. The same is true of the work performed by the pulvinus of Mimosa. The latent period is in general shorter under greater intensity of stimulus, the value becoming constant above a maximal stimulus. The shortest value in the pulvinus of Mimosa is 0·06 second, and I can show a pair of records giving a value of 0·109 second. A rise of temperature shortens the latent period. Under fatigue, on the other hand, the latent period is very much prolonged. When excessively tired the plant temporarily loses its power of response. In this condition the plant requires at least half an hour's period of absolute rest to regain its equanimity. In all these reactions we observe a remarkable parallelism with contraction phenomena in the muscle.

Death Spasm in Plants.

The electrical response of galvanometric negativity is abolished on the death of the plant. When the plant is subjected for a time to a temperature of 60° C. the electrical response disappears. This temperature is therefore fatal for most plants. In order to determine the exact death point I subjected Mimosa and various other plants to a gradual rise of temperature. This is attended by a progressive, expansive, or erectile movement; at the critical temperature of 60° C., however, the movement of expansion is suddenly reversed to a spasmodic excitatory contraction. The reversal takes place under standard conditions at or about 60° C.; after this the response of the plant is permanently abolished. The death-record is a V-shaped curve, the sharp point of inversion being the death-point. After death repetition of this experiment shows no further inversion. That this spasmodic contraction is a physiological phenomenon is further seen from the fact that the death point as determined from the inversion of the curve is lowered under physiological depression. Thus, fatigue will lower it to an extent depending upon the degree of fatigue. In a certain instance the death point, owing to fatigue, was lowered from the normal 60° C. to 37° C. Previous administration of dilute poison lowered the death point in another case by 18° C. Finally, I have shown that all excitatory reactions have as their concomitant a sudden electrical change, of a definite sign, and it is very significant that at the critical temperatare of 60° C. there occurs a sudden electrical discharge in the plant, the direction of the current being dependent on the differential excitabilities of the tissue.

Demonstration of Nervous Impulse in Plants.

The nervous character of impulse in plants has been demonstrated by me through various crucial tests. As in the case of the animal, so also in the case of the plant, the excitatory impulse may be arrested by the action of an electrotonic block. As long as the current is maintained so long is the impulse arrested; on the cessation of the blocking current, however, the conducting power is immediately restored. Local application of poison is found to arrest permanently the excitatory impulse through the poisoned tract.

Conducting Power of Nerve and its Variation.

We have seen how the physiological characteristics of the excitatory impulse in the plant are similar to those of nervous impulse in the animal. Under certain conditions the animal nerve undergoes changes leading to paralysis. In such a case a cure may sometimes be effected. The problem here is to impart to an ineffectively conducting tissue a better conducting power. This power of conduction or its absence is ultimately dependent on obscure molecular modifications. Discovery of parallel phenomena in the plant will undoubtedly prove of importance.

Induction of Artificial Paralysis and its Cure.

An interesting experiment relates to the artificial induction of temporary paralysis. When localised cooling is applied to a part of the petiole of Mimosa, the conduction of excitation through that portion becomes greatly delayed, till with sufficient cooling there is an actual block to the transmission of excitation. Thus it is possible by applying a fragment of ice to cause local paralysis of the conducting power of the petiole, which persists for over an hour, even after restoration of the tissues to the normal temperature. It is extremely suggestive that I was able under these conditions quickly to restore the conducting power by application of electrical shocks of moderate intensity to the paralysed region. Too strong a shock was, however, found to be highly detrimental.

Canalisation of Conducting Path.

In plant experiments I find a very significant result as regards the power of stimulus to fashion its own conducting path. Thus a plant carefully protected under glass from the stimulating buffets of the elements looks sleek and flourishing, yet as a perfect organism proves defective. Its conducting power is found to be in abeyance, though the motile organ exhibits its normal power of contraction. Anatomically the conducting elements are present, but from want of use they remain functionally inactive. Now in this condition it is very interesting to watch the growth of conducting power under the influence of stimulating blows. There is at first no transmission; after a time excitatory impulse begins to be initiated. Continued stimulation enhances the conducting power to a maximum. The concluding part of this process can be illustrated in the records.

Control of Nerve-conduction.

What is the change of the tissue which brings on paralysis? What is the molecular condition which confers conducting power on a nerve? These are very obscure problems, and any investigation calculated to throw light on the subject will undoubtedly prove of the highest importance, not only in theory, but also in practice. The nerve may have been rendered abnormal in two different ways. In one case it may have become extremely sluggish in transmitting an impulse. In the other case it may have become so hypersensitive as to transmit the feeblest excitation with intolerable intensity. In restoring the nerve to a normal condition we want to augment the conducting power in one case or arrest it in the other. A man who constantly uses the telephone has it in his power, by a simple process of switching on and off, to keep the circuit open or closed to the calls he receives, according as the message is pleasant or unpleasant. Can he similarly have the same control over the conducting system which exists within himself? Is it possible for him to augment or inhibit the nervous messages?

The phenomenon of excitation may be regarded as a process of molecular upset caused by stimulus, and the transmission of excitation as the propagation of the molecular disturbance. The phenomenon of molecular upset we may simply picture by means of a row of standing books. A certain intensity of blow applied, say, to the book on the extreme right

would cause it to topple over to the left, hitting its neighbours and causing them to fall in succession. If the books have previously been slightly tilted towards the left, a disposition would have been given to them which, by facilitating the fall, would accelerate the speed of transmission. Conversely, an opposite disposition would retard or arrest the movement. Thus by means of a directive or polar force we may induce a molecular predisposition which would enhance or retard the speed of the disturbance according to the directive action, positive or negative, of the polar force. It may thus be possible to discover some polar force which, by inducing characteristic molecular dispositions, would enhance or retard the conduction in a nerve, according to the direction of the acting force.

So much for theory; its value must be judged by practical results. It may be briefly stated here that, acting on the principle that has been described, I have been successful in inducing at will and by turns two opposite molecular dispositions in the conducting tissue of the plant. When the polar force was maintained in a positive direction the speed of the excitatory impulse was enhanced in a remarkable manner. The nervous impulse could on the other hand be increasingly retarded, and finally arrested, by reversing the direction of the force and increasing its intensity. These *supra* or *a*-conducting states were maintained as long as the nerve was subjected to the action of the polar force acting in positive or negative direction.[2]

I have referred to the conducting tissue of the plant as a *nerve*. The use of this term has, I think, been justified by the remarkable similarities of reactions between the conducting tissues of the plant and animal under varied conditions. Perhaps the crucial test of a theory may lie in the power which it gives of predicting unknown phenomena, the predictions being afterwards fully verified. Believing in the identity of characteristics of plant and animal nerves, I applied the same polar forces which I found to be so effective in my plant experiments to the nerve of the frog, and it was a matter of intense gratification to me to find that by employing the same methods I could exalt or inhibit at will the conducting power of the experimental nerve. The importance of this investigation must be obvious to all. Its success further proves the importance of physiological investigation on plants in elucidating intricate problems of animal physiology.

Similarities between Rhythmic Pulsations in Plant and Animal.

In *Desmodium gyrans*, or the telegraph plant, the small lateral leaflets exhibit automatic pulsations. I find that the characteristics of the rhythmic tissues in the plant exhibit surprising similarities to those of the cardiac tissue in the animal. The down movement of the leaflet is quicker and corresponds to the systolic movement of the heart. The maximum rate of this down movement is 0·9 mm. per second. The diastolic or up movement is much slower, its maximum rate being 0·56 mm. per second. The pulsating activity of the detached heart of a frog can be maintained for long periods by subjecting it to intercardiac pressure. Similarly the activity of the detached leaflet of *Desmodium* can be renewed by the application of internal hydrostatic pressure, after which the pulsation can be maintained uniform for many hours. The cardiac tissue of the animal has a long refractory period. The tissue takes no account of the stimulus which falls within the refractory period. This is also characteristic of the response of the rhythmic tissue of *Desmodium*. Rhythmic tissues, animal and vegetable alike, are incapable of tetanus. The pulsating leaflet of *Desmodium*, like the pulsating heart, is more susceptible to excitation at diastole than at systole. An extra pulsation is induced in both by an induction shock, applied during the diastolic phase.

By the application of Stannius's ligature the pulsation of the heart is arrested at diastole. A similar arrest at diastole is found to take place in the pulsation of *Desmodium* by the application of a ligature immediately below the motile organ. The arrest takes place either at once or after one or two vigorous beats. Similar effects are also obtained by making a cut, after suitably supporting the leaflet. While the leaflet is in the condition of this arrest it is often possible to renew the pulsation by the stimulus of an electrical shock. The effect of lowering of temperature on the rhythmic pulsation of *Desmodium* is similar to that on the pulsation of a frog's heart. Lowering of temperature enhances the amplitude, but reduces the frequency of pulsation of both. A rise of temperature, on the other hand, causes enhanced frequency and diminished amplitude of pulsation. The pulsation of the beating heart may be inhibited by the stimulation of the vagus nerve. The rhythmic pulsation of *Desmodium* leaflets may similarly be inhibited by applying electrical stimulation at some distance from the pulsating organ.

Effect of Chemical Agents on the Response of Plant Tissue.

For this investigation a series of uniform responses is first obtained under uniform stimuli. After the application of the given agent another series of responses is once more obtained under the same stimuli as before. The variation of amplitude of response then gives an indication of the excitatory or depressing action of the agent. The plant is intensely susceptible to the impurities present in the air. The vitiated air of the town has a very depressing effect. According to popular science, what is death to the animal is supposed to be life for the plant; for does it not flourish in the deadly atmosphere of carbonic acid gas? In reality the plant gets suffocated just like a human being. Only in the presence of sunlight is this effect modified by photosynthesis. In contrast to the effect of carbonic acid, ozone renders the plant highly excitable. Sulphuretted hydrogen, even in small quantities, is fatal to the plant. Chloroform acts as a strong narcotic, inducing a rapid abolition of excitability. The ludicrously unsteady gait of the response of the plant under alcohol could be effectively exploited in a temperance lecture! Equally remarkable are the effects of drugs on rhythmic tissues of plants. As regards the action of ether, the effect of very diluted vapour is generally to induce a transient exaltation, followed by depression and arrest of pulsation. If the leaflet be subjected to strong vapour and if the application be prolonged the arrest is permanent. But if diluted vapour be employed and fresh air substituted immediately after the arrest, then there is a slow revival of pulsation. The effect of chloroform is similar to that of ether, its reaction, however, being far more toxic; a slight access in the application is attended by a permanent arrest of pulsation.

This and numerous other reactions exhibit the

[2] The detailed account of this investigation has recently been communicated to the Royal Society.

remarkable similarity in the effect of various chemical agents on the animal and vegetable tissues. A very striking characteristic is the antagonistic reaction of acid and alkali on the animal heart. Application of very dilute acid induces in the heart an atonic reaction, in consequence of which there is brought about an arrest of pulsation in the relaxed or diastolic condition. The action of dilute alkaline solution is the very reverse of this—namely, a tonic contraction and arrest in systole. I find these effects repeated in an astonishing manner in the pulsation of *Desmodium*. The internal application of dilute solution of lactic acid is seen to induce an arrest in a state of diastolic relaxation. The application of dilute NaHO solution, on the other hand, induces exactly the opposite effect—i.e., an arrest at systolic contraction.

Effect of Dose.

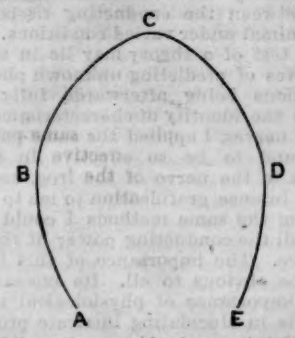
Another striking result that came out in my investigations on plant reactions is the modification of effect brought on by the strength of the dose. Thus, a poisonous reagent which caused depression or death was found to act as a stimulant when administered in minute quantities. As regards application of electrical current in medical practice, it is assumed that Pflüger's law, that it is the kathode that excites and anode that causes depression, is universally applicable. I find, however, that here too the strength of the current is a very important determining factor. Though the application of the anode causes depression with moderate currents, the reaction is completely reversed when the intensity of current exceeds a certain limiting value.

The Molecular Cycle.

We have seen how two precisely opposite results may be brought about by an identical drug or by an electrical current, owing to the varied strength of applications. There is, however, still another obscure factor which creates great perplexity. A given agent may cause a certain effect on one individual and an altogether different effect on another—"what is one man's meat is another man's poison." This difference is considered in some mysterious manner to be due to the varied constitutions of the individuals. As a concrete example I may cite the different reactions given by three batches of seedlings primarily similar. These were kept for some time under three distinct conditions and afterwards subjected to the action of a given dose of dilute poison. The first batch succumbed to the poison immediately; the second struggled for a time against it, recovered, and exhibited a moderate rate of growth afterwards. But the third batch was actually stimulated by the poison and demonstrated this by invigorated growth. Why should we find this difference? We must remember that the living tissue is not merely a mass of inert matter, but is a complexus of matter and energy held latent. The tissue may thus exist under widely different conditions, according as to whether it has been rendered active by the stimulating influence of its environment or reduced to a state of lethargy through being deprived of this. The source of stimulus here referred to includes every cause, internal or external, which brings about excitation. From the normal state of vigour the condition of the tissue may, according to circumstances, be carried to two opposite extremes—the state of inanition, through lack of stimulation, and the state of exhaustion through excess of stimulation. Between these two extremes are numerous gradations of tonic condition in the living tissue, these being determined by its past history; and it is impossible to predict what the answering reaction of the organism will be unless we know the exact position of the tissue in the scale of tonicity.

How then are we to obtain some measure of this obscure internal condition? There are two conceivable ways in which this could be attempted. One, by the study of outward posture or appearance of the organism; and second, by the character of its answers to testing shocks. A trained observer may be able to draw his inferences more or less accurately from outward appearances, but with plants we can depend on something more definite than this rule-of-thumb procedure. In the most favourable tonic condition of Mimosa, for example, the leaf is held out at a certain angle determined by the tonic contraction of the tissue. When the plant is kept completely isolated from all sources of stimulation it grows atonic, the tissue becomes relaxed, this being outwardly exhibited by the abnormally erect posture of the leaf. The plant is brought once more to a normal condition when subjected to the action of stimulus, the leaf once more occupying its normal outspread position. Under further stimulation the contractile movement reaches a limit, and when stimulation is carried to excess the contractile movement of fall is reversed into erectile movement of relaxation. If we had attached a recording lever we should have found a complete curve traced, something like Fig. 1.

FIG. 1.



Characteristic cyclic curve showing growing contraction brought about by increasing stimulus from atonic A to C through subtonic B; subsequent reversal under over-stimulus, D moderate, E excessive fatigue.

In the study of this curve it should be remembered that on account of the method of record employed the up-movement of the leaf is shown by the descent of the curve and *vice versâ*. These outward manifestations are the expressions of internal molecular change of a physico-chemical character, and the cyclic curve representing the varied conditions of the tissue I shall refer to as the cyclic molecular curve. It will be seen from the diagram that a point in the ascending has a corresponding point in the descending curve. From this we can see how liable we are to draw a wrong inference from exclusive reliance on outward appearance or posture; for example, the parallel relaxed positions of A and E may have been brought on by two diametrically opposite conditions—i.e., extreme atonicity as at A, over-fatigue as at E. In order to restore the tissue to the normal the aim should be

to bring it to the optimum condition C. For this diametrically opposed treatments are necessary, depending on the question of whether the tissue is at A or E condition. If it be at A stimulation is necessary, if at E rest or sedative treatment. But if we mistook E for A and applied further stimulation the case would have ended fatally through extreme exhaustion, while the other mistake would have been equally unfortunate for the plant, which would have met an untimely end through excessive inanition.

Turning next to the second method by which the changing condition of the tissue may be found from the progressive modification of replies to a testing stimulus, it is extremely interesting to find that corresponding to the molecular cycle which has been referred to there is a concomitant cyclic variation of response. In Fig. 2 I have given the

FIG. 2.

Typical responses under different molecular conditions, A, B, C, D, and E.

characteristic responses of the tissue under varying molecular conditions typical of A, B, C, D, and E. I may say here that these results have been verified by experimenting on various kinds of tissues, the methods of investigation employed being so different as the electrical and the mechanical.

In describing the changes of response corresponding to changes in the molecular condition of the tissue, I shall for the sake of simplicity designate all normal response by contraction or by galvanometric negativity, as the *negative* response; its converse—i.e., response by relaxation or galvanometric positivity—will be termed *positive* response. Beginning with the case of extreme subtonicity corresponding to the point A in the cyclic curve, we find a maximum variation from the normal, the response being abnormally *positive*. Continued stimulation improves the general tone from a condition of relaxation to a growing tonic condition and converts abnormal positive to normal negative. At the phase corresponding to B the condition of subtonicity is moderate; stimulus removes the inertness and confers on it an increasingly better tone. Hence the characteristic response at this stage is a staircase enhancement culminating in the optimum condition C. The highest point of the molecular cycle is thus reached. Further stimulation, strong and long continued, completes the other half of the cycle, now of descent. During this descent the response at first undergoes a change from negative to less negative; that is to say, there is an appearance of fatigue. Again, under excessive stimulation the response may decline to zero, or even undergo a reversal to abnormal *positive*. As in the characteristic curve so also in the series of responses, the two halves of the cycle are so strangely alike, one being as it were the reflection of the other. The cycle begins with extreme subtonicity due to lack of stimulation and ends with exhaustion brought on by excessive stimulation. The starting-point of the one may be supposed to meet the end of the other in a common fatality. But though the one half thus mimics the other, there is as it were a polar difference between the two by reason of the difference in their past histories, necessitating treatment which must be diametrically opposite according as the tissue happens to occupy the beginning or end of the cycle.

Thus it is clear that the progress of medicine may be greatly facilitated when the attention of investigators is drawn to the importance of the molecular aspects of the phenomena with which they have to deal. Thus in examining the action of drugs a threefold question is seen to rise. It must first be determined what is the nature of the reaction induced by the given agent under normal conditions. The second matter of inquiry is what is the critical dose above and below which opposite effects are brought about? And finally, as the nature of the response is profoundly influenced by the position which the tissue then occupies in the curve of molecular cycle, it follows that the most important element in the application of a curative agent will be in the determination of the place of the tissue in the cyclic curve.[3]

I have given in this brief sketch accounts of various experiments which seem to bring the plant much nearer to us than we ever thought. We find that it is not a mere mass of vegetative growth, but that its every fibre is instinct with sensibility. We find it answering to outside stimuli, the responsive twitches increasing with the strength of the blow that impinges on it. We are able to record the throbbings of its pulsating life, and find these wax and wane according to the life conditions of the plant, and cease with the death of the organism. We have seen how the whole plant is made one by connecting threads, so that the tremor of excitation initiated in one place courses through the whole; and how this nervous impulse, as in man, can be accelerated or arrested under the several actions of drugs and poisons. In these and many other ways the life-reactions in plant and man are alike: thus through the experience of the plant it may be possible to alleviate the sufferings of man.

[3] For complete account consult Bose's Plant Response (1906), Comparative Electro-Physiology (1907), and Researches on Irritability of Plants (1913), Longmans, Green, and Co.

EXETER CITY ASYLUM.—At the last meeting of the Exeter city council a considerable discussion took place in reference to the recent decision of the council that the medical superintendent of the city asylum should not engage in any private or consultative work. The matter was reported in THE LANCET of Oct. 31st. Eventually it was decided that the medical superintendent should be permitted to examine, when called in as a consultant, into the mental condition of any patient residing in Exeter.

A MONTHLY RECORD OF ATMOSPHERIC POLLUTION.

COMMITTEE FOR THE INVESTIGATION OF ATMOSPHERIC POLLUTION:

Summary of Reports for Month ending June 30th, 1914.

1	2	3	4	5	6	7	8	9	10	11	12
			Metric tons of deposit per square kilometre during month.								
			Insoluble matter.			Soluble matter.			Included in soluble matter.		
Place.	Correspondent.	Rainfall in millimetres.	Tar.	Carbonaceous other than tar.	Ash.	Loss on ignition.	Ash.	Total solids.	Sulphate as (SO_4).	Chlorine (Cl).	Ammonia (NH_3).
ENGLAND—											
Birmingham	Dr. J. Robertson, M.O.H.	54·36	0·2	4·48	11·76	1·96	4·7	23·1	2·36	1·20	1·36
Exeter	Mr. H. Lloyd Parry, Town Clerk.	32·50	0·07	1·78	2·83	0·83	1·04	6·55	0·45	0·058	—
Kingston-upon-Hull	Mr. A. R. Tankard, Public Analyst.	39·60	0·08	3·07	4·52	1·11	3·64	12·42	1·70	0·59	0·005
Liverpool	Dr. E. W. Hope, M.O.H.	38·02	0·46	2·26	8·93	1·37	3·27	16·29	2·07	0·35	0·16
London—											
Embankment Gardens	Mr. J. Ollis, Chief Officer, P.C.D.	34·00	0·24	4·52	7·31	0·90	3·31	16·28	1·38	0·32	0·07
Golden-lane	Dr. W. J. Howarth, M.O.H.	29·92	0·03	1·70	3·26	1·08	1·67	7·74	1·21	0·04	1·13
Meteorological Office	Director, THE LANCET Laboratory.	35·00	0·08	1·84	5·81	3·22	2·53	13·53	1·73	0·60	0·58
Malvern	Mr. W. Osborne Thorp, Surveyor and Waterworks Engineer, U.D.C.	73·00	0·01	0·24	0·38	0·88	1·32	2·83	0·74	0·23	0·03
Newcastle-on-Tyne	Dr. H. Kerr, M.O.H.	96·01	0·20	3·83	6·55	2·30	3·07	15·96	1·70	0·47	0·19
York	Dr. Edmund M. Smith, M.O.H.	51·00	0·10	1·47	3·51	1·01	2·83	8·92	1·19	0·47	0·19
SCOTLAND—											
Greenock	Mr. James Devine, Sanitary Inspector.	25·00	0·05	2·06	3·88	0·74	1·17	7·90	0·71	0·13	0·03
Leith	Mr. Thomas Bishop, Sanitary Inspector.	18·19	0·76	19·20	35·87	21·82	7·27	84·92	8·26	5·08	1·39
Paisley	Mr. W. W. Kelso, Sanitary Inspector.	13·82	0·10	3·66	7·06	0·44	1·22	12·48	0·61	0·10	0·26

Summary of Reports for Month ending July 31st, 1914.

ENGLAND—											
Birmingham	Dr. J. Robertson.	99·0	0·20	4·80	12·20	1·40	5·70	24·30	2·60	0·80	0·20
Bolton	Dr. J. E. Gould.	135·0	0·09	2·16	4·75	5·43	5·43	17·86	3·35	1·19	0·06
Exeter	Mr. H. Lloyd Parry.	85·0	0·05	1·76	3·42	1·50	1·70	3·38	0·75	0·30	0·00
Kingston-upon-Hull	Mr. A. R. Tankard.	66·0	0·09	4·57	3·98	1·22	3·70	13·56	1·91	0·40	0·06
Liverpool	Dr. E. W. Hope.	103·0	2·55	2·37	9·41	4·72	5·34	24·39	3·63	0·95	0·31
Malvern	Mr. W. Osborne Thorpe.	80·0	0·01	0·33	0·37	0·80	0·96	2·47	0·56	0·35	0·05
Manchester—											
School of Technology	Mr. J. Warrington, Sec., Air Pollution Advisory Board.	105·0	0·15	4·47	9·20	2·77	7·74	24·33	3·87	2·03	0·15
Newcastle-on-Tyne	Dr. H. Kerr.	69·0	0·14	3·42	5·19	0·96	2·75	12·46	1·84	0·31	0·20
York	Dr. Edmund M. Smith.	116·0	0·08	1·30	1·61	1·39	3·24	7·61	1·27	0·50	0·84
London—											
Meteorological Office	Director, THE LANCET Laboratory.	38·0	0·02	0·77	2·74	2·58	1·68	7·81	1·57	0·40	0·74
Embankment Gardens	Mr. J. Ollis.	33·0	0·17	4·08	5·49	1·50	3·65	14·86	1·05	0·42	0·02
Golden Lane	Dr. W. J. Howarth.	36·0	0·04	2·66	3·86	1·02	2·61	10·17	1·51	0·44	0·13
Sheffield—											
Attercliffe Burial Ground	Prof. W. P. Wynne.	88·0	0·36	3·49	11·86	2·55	9·27	27·53	4·60	1·61	0·08
Hillsborough Park	"	54·0	0·47	0·29	2·20	0·52	3·44	6·92	1·62	1·53	0·05
Meersbrook Park	"	66·0	0·06	1·40	2·06	1·27	2·55	7·36	1·95	1·16	0·06
Weston Park	"	56·0	0·43	0·95	3·72	0·90	3·57	9·63	1·94	0·95	0·78
SCOTLAND—											
Greenock	Mr. James Devine.	41·0	0·05	2·01	4·00	1·89	2·00	9·94	1·49	0·14	0·09
Leith	Mr. Thomas Bishop.	60·0	0·07	1·44	2·63	0·94	2·20	7·28	1·13	0·15	0·12
Paisley	Mr. W. W. Kelso.	59·0	0·09	2·65	4·26	2·13	1·66	10·79	1·02	0·28	0·06

Summary of Reports for Month ending August 31st, 1914.

ENGLAND—											
Birmingham	Dr. J. Robertson.	55·0	0·10	2·50	7·50	0·90	3·20	14·20	1·70	0·30	0·10
Bolton	Dr. J. E. Gould, M.O.H.	89·0	0·20	2·94	6·15	2·49	6·41	18·02	3·66	0·49	0·06
Exeter	Mr. H. Lloyd Parry.	59·0	0·03	1·08	2·25	0·91	1·95	6·21	0·79	0·12	0·01
Kingston-upon-Hull	Mr. A. R. Tankard.	57·0	0·08	3·26	3·55	1·60	3·21	11·70	1·75	0·22	0·03
Liverpool	Dr. E. W. Hope.	58·0	0·03	1·63	6·52	2·68	4·90	15·81	2·86	0·37	0·24
Malvern	Mr. W. Osborne Thorpe.	36·0	0·01	0·25	0·45	0·43	0·87	2·01	0·47	0·13	0·03
Manchester—											
Cheadle	Mr. J. Warrington.	83·0	0·11	2·19	1·55	1·47	3·40	8·72	1·63	0·61	0·08
Davyhulme	"	64·0	0·02	0·81	0·82	0·56	2·06	4·26	1·38	0·28	0·06
Fallowfield	"	89·0	0·02	0·73	1·05	0·78	2·02	4·60	1·44	0·31	0·05
School of Technology	"	79·0	0·07	3·23	5·96	1·31	3·76	14·33	2·31	0·64	0·07
University	"	71·0	0·09	1·74	3·03	0·79	1·75	7·40	1·17	0·39	0·07
Whitefield	"	101·0	0·05	1·28	1·89	0·98	4·47	8·66	2·52	0·47	0·06
Newcastle-on-Tyne	Dr. H. Kerr.	32·0	0·12	3·87	6·52	0·78	2·14	13·44	1·30	0·22	0·08
Oldham	Dr. J. B. Wilkinson, M.O.H.	92·0	0·16	3·25	8·26	1·84	5·53	19·04	1·48	0·59	0·16
York	Dr. E. M. Smith.	39·0	0·11	1·89	3·67	0·78	2·32	8·79	1·04	0·27	0·25
London—											
Meteorological Office	Director, THE LANCET Laboratory.	28·0	0·03	1·69	2·27	1·33	3·46	8·80	1·72	0·40	0·19
Embankment Gardens	Mr. J. Ollis.*										
Golden Lane	Dr. W. J. Howarth.	31·0	0·03	1·36	2·37	0·99	2·35	7·09	1·44	0·36	0·10
Sheffield—											
Attercliffe Burial Ground	Prof. W. P. Wynne.	32·0	0·48	3·45	10·62	1·36	5·43	21·34	2·68	1·08	0·06
Hillsborough Park	"	32·0	0·36	0·74	3·01	0·89	2·36	7·36	1·18	0·58	0·03
Meersbrook Park	"	50·0	0·48	0·45	1·80	0·64	2·05	5·42	0·98	0·67	0·04
Weston Park	"	36·0	0·56	0·34	2·92	1·50	2·94	8·25	1·20	0·47	0·03
SCOTLAND—											
Greenock	Mr. James Devine.	120·0	0·03	1·64	2·69	1·80	2·39	8·54	1·03	0·21	0·06
Leith	Mr. Thomas Bishop.	43·0	0·10	1·76	4·27	0·44	2·21	8·78	1·03	0·10	0·06
Paisley	Mr. W. W. Kelso.	107·0	0·11	2·57	4·15	2·57	3·42	12·82	1·32	0·38	0·09

Col. 4 includes all matter insoluble in water but soluble in CS_2. Col. 5 includes all combustible matter insoluble in water and in CS_2. Col. 6 includes all earthy matter, fuel, ash, &c. One metric ton per sq. kilometre is equivalent to: (*a*) Approx. 9 lb. per acre; (*b*) 2·56 English tons per sq. mile; (*c*) one gramme per sq. metre; (*d*) 1/1000 millimetre of rainfall (see Col. 3). *No returns to hand.

THE CLAIMS OF BRITISH SPAS.

(*Continued from p. 1009.*)

V.—BATH.

As far back as 1904 we suggested that the fact that the Bath waters were found to be radio-active might lead to a more satisfactory explanation of the favourable action of natural mineral waters in hydro-therapeutic practice, and further inquiry has abundantly shown that the suggestion was a sound one. A consideration of the chemical constituents of the thermal waters of Bath throws practically no light on the admitted therapeutic efficiency of a course of these waters. As, Sir William Ramsay has pointed out, the recorded analyses of the Bath waters show, in the main, mere ordinary constituents, most of which are present in many drinking waters. Sulphates of calcium, of sodium, of potassium, carbonates of calcium and magnesium, are all common substances. He adds that the only unusual constituents of Bath waters, so far as the analysis made at THE LANCET Laboratory shows, are small quantities of strontium, of lithium, and a trace of bromine. Many mineral waters have for ages been used for curative purposes, and our present knowledge that such waters, while not remarkable in "chemical" composition, are all alike in yielding helium, the product of decay of radium, makes it particularly interesting to examine these waters for radium emanation or niton, as well as for radium itself.

The discovery of the radio-activity of the Bath thermal waters had its origin in the observation that helium is a product of the change of radium. The presence of helium in a water, in fact, implies either that radium is present in the water itself or that the water has been, at one period or another, in contact with radium. The figures subsequently arrived at by Sir William Ramsay are given according to the amount of radium with which the emanation or niton is in equilibrium. The amount of radium in the water of the King's Spring represents only about 1/470th part of a grain in something like 200,000 gallons (0·1387 milligramme per million litres). The niton, however, is present in much greater quantity (1·73 milligramme per million litres). The gas coming from the water contains much more niton than the water itself, so that the water must hold as much as it can at the high temperature at which it emerges (120° F.). The amount of niton in the disengaged gases is that which would be in equilibrium with 33·65 milligrammes of radium in a million litres of water.

Bath, therefore, appears to possess the richest radio-active waters in the country, and it remains to consider what significance this fact possesses in regard to their therapeutic action. There seems to be little doubt, at all events, that whether administered by the skin, as in immersion, or by respiration, as must happen also during the immersion, radio-active energies act directly by improving the processes of nutrition and metabolism. Enzymic activity is promoted and oxidation processes are stimulated to a more complete stage. There is thus produced a higher excretion of urinary solids apart from chlorides, and there is frequently observed a considerable multiplication of red blood cells. In regard to the bactericidal effects of emanation it is interesting to note that the treatment of gonorrhœal arthritis at Bath meets with conspicuous success, which would seem to indicate a destructive action upon gonococci. The opinion, however, of medical men familiar with the hydro-therapeutic practices at Bath is that a definite contra-indication of radium therapy is in tuberculous conditions. Chronic nephritis falls into the same category. The question of contra-indication is clearly decided by what appears to be the main effect of radio-active treatment, which is primarily a stimulation of metabolism. The dosage can be increased at Bath to an almost unlimited extent by supplementing treatment by immersion with the use of vapour sprays for inhalation. A special radium inhalatorium has been installed suitable for this treatment, and the results are most encouraging.

The reputation of Bath has, however, been founded chiefly upon the undoubted benefit which a course of treatment there has conferred upon sufferers from gout in all its forms, chronic articular rheumatism, muscular rheumatism, rheumatoid arthritis, sciatica, and so on. The general experience in these directions teaches that in affording relief to such conditions Bath is in no sense inferior to the spas abroad which have established similar claims.

Amongst other cases which benefit at Bath are certain disorders of the digestive organs, muco-membranous colitis, chronic gastric catarrh, diseases of the skin, anæmia and chlorosis, ailments of women, and tropical infections.

Outside the indications for treatment with the natural thermal and radio-active waters the Bath corporation have provided a remarkably complete installation of auxiliary appliances in the shape of electric hot-air baths, hydro-electric baths, Nauheim treatment, and sulphur and other medicated baths. There are also provided medico-mechanical exercises for joints and muscles on the Zander system. Lastly, the radio-active waters of Bath give excellent results in the treatment of muco-membranous colitis by means of the intestinal or Plombières douche.

The programme of social attractions, recreation, and amusements reflects great credit upon the authorities at Bath, who have established a well-organised and equipped inquiry office where visitors can obtain complete information from day to day as to these important diversions from a course of treatment. There is a magnificent music chamber situated in the building of the Grand Pump Room itself, and the talent provided is of a really high order. The situation of the city is picturesque and attractive, and the shelter afforded by the beautiful hilly country on all sides renders its climate mild and equable. This fact is specially appreciated in the autumn and winter. The architectural beauties of the city's buildings, streets, and squares are well known. The history of Bath as a bathing station of course goes back a long way, and the excavations that have been made in recent years disclosing beautiful Roman designs and construction are of great interest. The remains of the Roman thermæ are quite extensive, and here and there in a well-preserved state, bearing decided evidence of the importance attached to the waters of Bath by the Romans. Coming to later times, the city enjoyed a great vogue amongst distinguished people early in the eighteenth century, but since that date the development of the bathing establishments has proceeded rapidly on scientific lines, which should make Bath a formidable competitor to continental enterprise. Some

idea of the extent of the provision demanded for the supply of the radio-active mineral water to the various baths, douches, and sprays may be gained from the fact that in these places there are close upon 1000 taps, while the pipes for the whole service would, if extended continuously, reach a length of no less than 40 miles.

(To be continued.)

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

MEETING OF COMITIA.

A COMITIA was held on Oct. 29th, Sir THOMAS BARLOW, Bart., K.C.V.O., the President, being in the chair.

The following gentlemen having passed the required examination were admitted Members of the College: Philip Heinrich Bahr, M.B. Cantab., L.R.C.P.; Vraspillai Gabriel, L.R.C.P.; Alfred Howell, M.D. Lond., L.R.C.P.; Ernest Rivaz Hunt, M.D. Cantab., L.R.C.P.; Hugh Basil Greaves Newham, L.R.C.P.; and James Herbert Rhodes, M.B. Lond., L.R.C.P.

Licences to practise physic were granted to 67 gentlemen who had passed the requisite examinations.

The following communications were received: 1. From the secretary of the Royal College of Surgeons of England, dated Sept. 24th and Oct. 9th, reporting proceedings of the Council of that College on Sept. 24th and Oct. 8th respectively. The second letter reported that Mr. J. D. M. Cardell had been appointed the twenty-second Jenks scholar. 2. From the Registrar of the General Medical Council, dated Sept. 24th, concerning the maintenance of the minimum medical curriculum during the present national emergency. 3. From Mr. Oswald Sickert, dated Sept. 10th, asking leave to reproduce a photograph of the portrait of Dr. John Arbuthnot in connexion with an illustrated encyclopædia. The request was granted. 4. From Sir R. Douglas Powell presenting to the College a photograph of the painting by Yeames of Harvey at the Battle of Edgehill. The gift was accepted with the thanks of the College.

It was resolved that the President of the College should become, *ex officio*, a member of an Advisory Board to the National Council for Combating Venereal Diseases.

A further report was received from the Censors' Board concerning restrictions in the sale of opium and other narcotics. The Board recommended that Clause 4 of their original report, which clause was referred back to the Board at the quarterly July Comitia, should read as follows:—

> 4. That with regard to prescriptions which, when fully made up, contain 1 per cent. (1 grain in 110 minims, which is approximately 4·5 grains to the fluid ounce) or more of the alkaloids in question, and in the case of every preparation intended for subcutaneous use, the doctor should state in his prescription the number of doses to be supplied. The prescription should not be dispensed more than once unless at each renewal it is fully signed and dated by a qualified medical practitioner.

The report was adopted.

Dr. J. A. Ormerod was re-elected a member of the Committee of Management.

A report, dated Oct. 15th, from the Committee of Management was received and adopted. The report stated that the committee had had under consideration the existing regulation to the admission to the Final Examination of students of colonial, Indian, and foreign universities recognised by the Board. It was considered that the present requirement was a hardship, and the committee recommended that Clause IV. should be altered to read as follows:—

> IV. Members of colonial, Indian, or foreign universities who shall have passed such an examination or examinations at their universities for the degree of Doctor or Bachelor of Medicine or Surgery as shall comprise the subjects of the First and Second Examinations of the Examining Board in England, and who shall have completed the curriculum of medical study required by the Regulations of the Board, will, two years after having passed such examinations, be eligible for admission to the Third or Final Examination of the Board; any candidates so admitted to examination will be required to pay a fee of twenty guineas, and any such candidates who shall have passed the Third or Final Examination shall, on the further payment of not less than twenty guineas, and subject to the by-laws of each College, be entitled to receive the Licence of the Royal College of Physicians of London and the diploma of Member of the Royal College of Surgeons of England.

The quarterly report of the College Finance Committee was received and adopted. Amongst other matters it was mentioned that the committee recommended that the College should contribute 200 guineas to the Prince of Wales's Fund for relief of distress caused by the war.

After some further formal business the PRESIDENT dissolved the Comitia.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments have been notified:—Staff-Surgeon: E. M. W. Hearn to the *Vivid*, additional, for the *Reliance*. Temporary Surgeons: E. M. Thompson to the *Vivid*, additional, for War College, Devonport; J. C. Baggs and H. T. Depree, both to the *Vivid*, additional, for Plymouth Hospital; J. D. Clarke, D. Flack, and K. Wolferstan, all to the *Pembroke*, additional, for disposal; G. C. Scott to the *Wildfire*, additional, for disposal; J. A. Watson, H. Hemsted, and P. W. Carruthers, all to the *Victory*, additional, for Haslar Hospital; and R. N. McKinstry to the *Victory*, additional, for disposal.

ROYAL NAVAL RESERVE.

In accordance with the Regulations for Royal Naval Reserve, Lieutenant William George Lewin has been placed on the retired list (dated Oct. 7th).

The undermentioned Acting Surgeons have been confirmed in the rank of Surgeon in His Majesty's Fleet:—Arthur Edward Panter, Henry Brice Parker, Julian Lionel Priston, Richard Frith Quinton, Mark James Aitken, Joseph Archibald Maxwell, Maurice Sydney Moore, William Glossop Thwaytes, Clarence Edward Greeson, William Forbes Beattie, Herbert Wyndham Fitzroy-Williams, Francis Edmund Fitzmaurice, Timothy Joseph O'Riordan, James Cecil Kelly, James Mulvihill Horan, Gilbert Malise Graham, and Frank Cornwell Hunot.

ROYAL NAVAL VOLUNTEER RESERVE.

Surgeon: W. J. A. Quine to the *Vivid*, additional, for disposal, vice McDowell.

ARMY MEDICAL SERVICE.

The undermentioned to be temporary Colonels:—Dated Oct. 10th: Lieutenant-Colonel Sir Wilmot P. Herringham, 1st London (City of London) General Hospital, Royal Army Medical Corps, Territorial Force; Sir Almroth E. Wright, F.R.S.; Captain Frederic F. Burghard, 4th London General Hospital, Royal Army Medical Corps, Territorial Force; and Major Sir John Rose Bradford, K.C.M.G., F.R.S., 3rd London General Hospital, Royal Army Medical Corps, Territorial Force.

To be temporary Lieutenant-Colonel:—Dated Oct. 21st: Willie Netterville Barron, M.V.O.

ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel Robert Caldwell is retained on the active list under the provisions of Article 120, Royal Warrant for Pay and Promotion, 1913, and to be Supernumerary (dated Oct. 30th).

The undermentioned Captains to be Majors:—Dated Oct. 31st: John G. Bell, Frederick W. W. Dawson, Joseph E. H. Gatt, Thomas S. Coates, James C. G. Carmichael, Roland H. Bridges, James A. W. Webster, Francis C. Lambert, Reginald C. Wilmot, Harry B. Kelly, Edward M. Pennefather, Benjamin H. V. Dunbar, David Ahern, Donald G. Carmichael, John M. M. Crawford, Thomas E. Harty, John H. Duguid, Burnet G. Patch, and Geoffrey W. G. Hughes.

The undermentioned to be temporary Lieutenants:—Dated Oct. 10th: John Henderson, Lawrence Fielder Hemmans, and William Baxter. Dated Oct. 12th: Tremlett Brewer Batchelor, Noel Anthony Coward, Lionel Palliser Costabadie, John Davidson, Ranald Montague Handfield-Jones, John George Ingouville, Michael John Mulligan, Michael Murphy, George Wardlaw Milne, Humphrey Neame, Vivian Morris Rich, Edward Llewellyn Nott Rhodes, George Thom, John Tichborne, George Wishart Will, and Trevor Owen Williams. Dated Oct. 13th: Adam Gray and William Guy Lidderdale. Dated Oct. 14th: Thomas Renton Elliott. Dated Oct. 15th: Frank Arthur Grange, John Davis Lithgow, James Anstruther Smith, and Malcolm Winfrid Shutte. Dated Oct. 16th: John Westcott Dew. Dated Oct. 17th: John Henry Dyke Acland, Henry Albert Ehrlich, Alexander Fleming, and Robert Charles Irvine.

The undermentioned Cadets and ex-Cadets of the Officers Training Corps to be Lieutenants (on probation):—Dated Oct. 15th: Harold Armstrong Crouch and Francis Augustus Roddy. Dated Oct. 20th: Charles Arthur Mason.

The undermentioned to be Lieutenants (on probation):—Dated Oct. 14th: Donald Charles Scott. Dated Oct. 16th: Wilfrid Burton Wood and Herbert Stewart Milne. Dated Oct. 17th: John Sandys Pooley. Dated Oct. 19th: Quentin Vaughan Brooke Wallace, Gilbert Aberdein Harvey, and William Howard Nicholls.

Charles E. L. Burman relinquishes his temporary commission (dated Oct. 13th).

INDIAN MEDICAL SERVICE.

The King has approved the promotion of the following officers of the Indian Medical Service:—

Colonel to be Surgeon-General:—Dated April 1st, 1912: George Francis Angelo Harris, C.S.I. Lieutenant-Colonel to be Colonel:—Dated April 1st, 1912: Francis James Drury. Lieutenants to be Captains:—Dated Jan. 28th: John Scott and George Selby Brock. Dated April 23rd: Kanwar Indarjit Singh, Krishnan Gopinath Pandalai, and Charles Albert Wood.

The provisional promotions to the rank of Captain of the following officers are confirmed:—William Haywood Hamilton (dated Feb. 1st, 1908), John Francis Boyd (dated Sept. 1st, 1908), and Percy Strickland Mills (dated Feb. 1st, 1909).

CHANNEL ISLANDS MILITIA.

Medical Corps.

Surgeon-Captain Arthur C. Stamberg to be Surgeon-Major (dated Oct. 18th).

TERRITORIAL FORCE.

Army Medical Service.

Major Gerald C. Taylor, from the list of officers, Sanitary Service, Territorial Force, to be Deputy Assistant Director of Medical Services, 2nd Mounted Division, Central Force. Lieutenant-Colonel R. R. Sleman, 1st London (City of London Field Ambulance) Royal Army Medical Corps, Territorial Force, is granted the local rank of Colonel whilst serving at Malta.

Royal Army Medical Corps.

Major James G. McNaught to be Lieutenant-Colonel, vice R. Caldwell, supernumerary. Lieutenant Donald Armour, Royal Army Medical Corps, Special Reserve, to be granted temporarily the honorary rank of Lieutenant-Colonel. William Netterville Barron, M.V.O., to be a temporary Lieutenant-Colonel. Alexander Gordon Paterson is granted temporarily the honorary rank of Major.

1st London General Hospital: The undermentioned Captains to be seconded: William B. Ainger, Herbert D. Clementi-Smith, and George H. L. Whale.

4th London General Hospital: Captain Frederic F. Burghard is seconded.

1st Southern General Hospital: Frank Douglas Marsh (late Cadet, Cambridge University Contingent, Senior Division, Officers Training Corps) to be Captain, whose services will be available on mobilisation.

2nd Northern General Hospital: Major Joseph F. Dobson to be Lieutenant-Colonel.

3rd Northern General Hospital: Captain George H. Pooley to be Major.

1st London (City of London) Field Ambulance: Captain Charles S. Brebner to be Major (temporary).

2nd London (City of London) Field Ambulance: Major William Vernor Sinclair (formerly Royal Army Medical Corps, Special Reserve) to be Major. Ernest Urquhart Bartholomew (late Captain, Special Reserve) to be Major.

3rd London (City of London) Field Ambulance: James Leonard Octavius Tilley to be Lieutenant.

6th London Field Ambulance: Captain John W. Bird (from the Territorial Force Reserve) to be Captain.

5th London Field Ambulance: Major Mowbray Taylor, Retired List, Volunteer Force, to be Major.

1st South Midland Field Ambulance: Henry Philip Thomason to be Lieutenant.

2nd South Midland Field Ambulance: Lieutenant Cyril R. Wallace, from 1st South Midland Field Ambulance, to be Lieutenant.

3rd South Midland Field Ambulance: Lieutenant Charles E. K. Herapath to be Captain.

2nd South Midland Mounted Brigade Field Ambulance: Humphrey Francis Humphreys to be Lieutenant.

1st North Midland Field Ambulance: Captain Henry G. W. Dawson to be Major (temporary). Geoffrey Holmes to be Lieutenant.

1st Lowland Field Ambulance: The undermentioned to be Lieutenants: Arthur William Sutherland, George Balfour Eadie, and Percival John Moir.

2nd Lowland Field Ambulance: Quartermaster and Honorary Lieutenant James Law, from the Lowland Clearing Hospital, to be Quartermaster, with the honorary rank of Lieutenant.

3rd Lowland Field Ambulance: William Wells Greer to be Lieutenant.

Lowland Mounted Brigade Field Ambulance: Andrew Morton Young to be Lieutenant.

2nd West Riding Field Ambulance: Francis William Begg to be Lieutenant.

3rd West Riding Field Ambulance: Donald Sargenson Twigg to be Lieutenant.

3rd Welsh Field Ambulance: William Rutherford and George Young to be Lieutenants.

1st Wessex Field Ambulance: The undermentioned Captains to be Majors: Thomas Duncan and George P. D. Hawker. Lieutenant William H. E. Stewart, from Attached to Units other than Medical Units, to be Captain.

2nd Wessex Field Ambulance: The undermentioned Captains to be Majors: Fielding C. Whitmore and Thomas P. Puddicombe.

3rd Wessex Field Ambulance: Major Alexander Milne-Thomson to be Lieutenant-Colonel. Captain Edmund Alderson to be Major. Charles Balfour Stewart to be Lieutenant.

South Wales Mounted Brigade Field Ambulance: Arthur Malsen Deane (late Lieutenant, 2nd West Riding Brigade, Royal Field Artillery) to be Lieutenant.

1st East Anglian Field Ambulance: Harry Whitaker to be Lieutenant.

3rd East Anglian Field Ambulance: George Hastie Harper-Smith to be Lieutenant.

2nd Highland Field Ambulance: George Spencer Melvin to be Lieutenant.

2nd Home Counties Field Ambulance: James William Cairns to be Lieutenant.

1st West Lancashire Field Ambulance: William Evans Graham to be Lieutenant.

4th (Cumberland and Westmorland) Battalion, The Border Regiment: Lieutenant Norman Maclaren resigns his commission.

1st London (City of London) Sanitary Company: Samuel Reginald Orme Dudfield to be Captain.

2nd London Sanitary Company: Arthur George Atkinson to be Lieutenant.

Sanitary Officers: William McConnel Wanklyn to be Captain.

Sanitary Service: James Albert Gibson to be Captain.

Attached to Units other than Medical Units.—Lieutenant-Colonel and Honorary Surgeon-Colonel Charles H. Gwynn resigns his commission, and is granted permission to retain his rank and wear the prescribed uniform. To be Majors: Captain John Livingstone, Captain Frederick N. Grinling, Captain William F. McAllister-Hewlings, Captain William S. Griffith, and Edward Thomas Vint. To be Captains: Lieutenant Alexander D. Kennedy, Lieutenant Francis V. Denne, Captain George Potts, from the 1st Home Counties Field Ambulance, Harold Christopher Simpson (late Lieutenant 9th (Highlanders) Battalion, The Royal Scots (Lothian Regiment)) Lieutenant James L. Brownridge, and Lieutenant Alexander P. Watson. To be Lieutenants: George Shaw Glass, William Dale (late Lance-Corporal, London University Contingent, Senior Division, Officers Training Corps), Robert Unwin Moffat, C.M.G., Archibald Oliver, William Ernest Fitzgerald, John Ernest Pearce, Stanley Hodgson, Pierce Nagle Creagh, Herbert Edward Murray, Norman Maclaren (late Lieutenant 4th (Cumberland and Westmorland) Battalion, The Border Regiment), Arthur Christopher Watkin (late Second Lieutenant 4th Battalion, The King's (Shropshire Light Infantry)), Stephen Ormond Dolan, Arthur Edwin Bullock, and Frank Rex Fletcher.

TERRITORIAL FORCE RESERVE.

Royal Army Medical Corps.

Lieutenant Robert Steele Young, from 1st East Lancashire Field Ambulance, to be Lieutenant.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In the 97 English and Welsh towns with populations exceeding 50,000 persons at the last Census, 8529 births and 4708 deaths were registered during the week ended Saturday, Oct. 31st. The annual rate of mortality in these towns, which had been 13·9, 13·4, and 13·8 per 1000 in the three preceding weeks, fell in the week under notice to 13·5 per 1000 of their aggregate population, estimated at 18,120,059 persons. During the first four weeks of the current quarter the mean annual death-rate in these towns averaged 13·7, against 14·1 per 1000 in the metropolis. Among the several towns the death-rate last week ranged from 4·7 in Hornsey, 5·1 in Exeter, 5·3 in Darlington, 5·7 in Ilford, 6·3 in Cambridge, and 7·3 in Ealing, to 20·4 in Liverpool, 20·5 in Gateshead, 20·8 in Newcastle-on-Tyne, 22·3 in Middlesbrough, and 24·7 in Bury.

The 4708 deaths from all causes were 80 fewer than the number in the previous week, and included 472 which were referred to the principal epidemic diseases, against 529 and 540 in the two preceding weeks. Of these 472

deaths, 204 resulted from infantile diarrhœal diseases, 123 from measles, 61 from diphtheria, 38 from scarlet fever, 32 from whooping-cough, and 14 from enteric fever, but not one from small-pox. The mean annual death-rate from these diseases was equal to 1·4, against 1·6 per 1000 in the previous week. The deaths of infants (under 2 years) attributed to diarrhœa and enteritis, which had steadily declined from 1223 to 269 in the six preceding weeks, further fell to 204 last week, of which 44 were registered in London, 19 in Liverpool, 14 in Birmingham, 11 in Manchester, 10 in Newcastle-on-Tyne, 8 in Stoke-on-Trent, and 8 in Sheffield. The deaths referred to measles, which had been 73, 67, and 101 in the three preceding weeks, further rose to 123, and caused the highest annual death-rate of 1·7 in Wigan and in Newcastle-on-Tyne, 1·8 in Liverpool, 2·0 in Wakefield, and 2·3 in Birkenhead. The fatal cases of diphtheria, which had been 57, 59, and 79 in the three preceding weeks, fell to 61 last week, and included 20 in London, 6 in Birmingham, 4 in Manchester, 3 in Liverpool, and 2 each in Leyton, Northampton, and Great Yarmouth. The deaths attributed to scarlet fever, which had been 31, 29, and 37 in the three preceding weeks, were 38 last week, of which 10 occurred in London, 7 in Manchester, 4 in Liverpool, and 2 each in Birmingham, Preston, and Leeds. The deaths referred to whooping-cough, which had declined from 50 to 35 in the four preceding weeks, further fell to 32 last week, and included 6 in London, 4 in Liverpool, and 2 in Nottingham. The fatal cases of enteric fever, which had been 17, 14, and 19 in the three preceding weeks, fell to 14 last week, of which 4 occurred in London and 4 in Hull.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had steadily increased from 3071 to 4617 in the ten preceding weeks, had further risen to 4683 on Saturday last; 598 new cases were admitted during the week, against 670, 650, and 657 in the three preceding weeks. These hospitals also contained on Saturday last 1505 cases of diphtheria, 69 of enteric fever, 54 of whooping-cough, and 47 of measles, but not one of small-pox. The 1224 deaths from all causes in London were 49 fewer than in the previous week, and corresponded to an annual death-rate of 14·1 per 1000. The deaths referred to diseases of the respiratory system, which had increased from 110 to 191 in the six preceding weeks, further rose to 197 in the week under notice, and were 19 in excess of the number registered in the corresponding week of last year.

Of the 4708 deaths from all causes in the 97 towns, 215 resulted from different forms of violence and 367 were the subject of coroners' inquests, while 1409 occurred in public institutions. The causes of 29, or 0·6 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Manchester, Sheffield, Leeds, Bristol, Bradford, Hull, Newcastle-on-Tyne, and in 77 other smaller towns. Of the uncertified causes of death, 9 were registered in Birmingham, 6 in Liverpool, and 4 in Gateshead.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns with an aggregate population estimated at 2,293,200 persons at the middle of this year, 1127 births and 640 deaths were registered during the week ended Saturday, Oct. 31st. The annual rate of mortality in these towns, which had been 15·9, 14·7, and 15·0 per 1000 in the three preceding weeks, declined to 14·6 per 1000 in the week under notice. During the first four weeks of the current quarter the mean annual death-rate in these towns averaged 15·1, against 13·7 per 1000 in the 97 large English towns. Among the several towns the death-rate last week ranged from 6·8 in Hamilton, 7·6 in Motherwell and in Kirkcaldy, and 10·1 in Dundee, to 15·0 in Leith, 15·7 in Aberdeen, and 16·5 in Glasgow.

The 640 deaths from all causes were 19 fewer than the number in the previous week, and included 78 which were referred to the principal epidemic diseases, against numbers declining from 96 to 80 in the three preceding weeks. Of these 78 deaths, 26 resulted from infantile diarrhœal diseases, 16 from diphtheria, 14 each from scarlet fever and whooping-cough, 5 from enteric fever, and 3 from measles, but not one from small-pox. The mean annual death-rate from these diseases was equal to 1·8, against 1·4 per 1000 in the 97 large English towns. The deaths of infants (under 2 years) attributed to diarrhœa and enteritis, which had been 54, 29, and 31 in the three preceding weeks, fell to 26 last week, of which 14 were registered in Glasgow, 5 in Aberdeen, and 2 in Edinburgh. The deaths referred to diphtheria, which had increased from 4 to 19 in the six preceding weeks, fell to 16 last week, and included 6 in Edinburgh, 4 in Glasgow, and 3 in Aberdeen. The fatal cases of scarlet fever, which had increased from 6 to 16 in the six preceding weeks, fell to 14 last week; 7 deaths occurred in Glasgow, 3 in Aberdeen, and 2 in Leith. The deaths attributed to whooping-cough, which had been 8, 10, and 9 in the three preceding weeks, rose to 14 last week, of which 9 were recorded in Glasgow and 2 in Paisley. The 5 deaths referred to enteric fever, of which 3 occurred in Glasgow, were equal to the average in the three preceding weeks. Of the 3 fatal cases of measles 2 were recorded in Glasgow and 1 in Dundee.

The deaths referred to diseases of the respiratory system, which had steadily increased from 62 to 89 in the six preceding weeks, further rose to 92 in the week under notice; 17 deaths resulted from various forms of violence, against 29 and 21 in the two preceding weeks.

HEALTH OF IRISH TOWNS.

In the 27 town districts of Ireland with an aggregate population estimated at 1,205,280 persons at the middle of this year, 592 births and 352 deaths were registered during the week ended Saturday, Oct. 31st. The annual rate of mortality in these towns, which had been 15·4, 16·2, and 15·8 per 1000 in the three preceding weeks, fell to 15·2 per 1000 in the week under notice. During the first four weeks of the current quarter the mean annual death-rate in these towns averaged 15·7, against corresponding rates of 13·7 and 15·1 per 1000 in the English and Scotch towns respectively. The annual death-rate last week was equal to 14·4 in Dublin (against 14·1 in London and 16·5 in Glasgow), 14·0 in Belfast, 21·8 in Cork, 11·4 in Londonderry, 21·7 in Limerick, and 22·8 in Waterford, while in the 21 smaller towns the mean death-rate was 15·4 per 1000.

The 352 deaths from all causes were 13 fewer than the number in the previous week, and included 51 which were referred to the principal epidemic diseases, against 57 and 44 in the two preceding weeks. Of these 51 deaths, 19 resulted from infantile diarrhœal diseases, 12 from scarlet fever, 7 from measles, 5 from diphtheria, and 4 each from enteric fever and whooping-cough, but not one from small-pox. The mean annual death-rate from these diseases was equal to 2·2, against 1·4 and 1·8 per 1000 in the English and Scotch towns respectively. The deaths of infants (under 2 years) from diarrhœa and enteritis, which had steadily declined from 74 to 21 in the six preceding week, further fell to 19 last week, of which 7 were registered in Dublin, 6 in Belfast, and 2 in Cork. The deaths referred to scarlet fever, which had been 4, 7, and 5 in the three preceding weeks, rose to 12 last week, and comprised 4 in Waterford, 3 each in Belfast and Limerick, and 2 in Dublin. The 7 fatal cases of measles, comprising 6 in Belfast and 1 in Dublin, were equal to the number in each of the two preceding weeks. Of the 5 deaths attributed to diphtheria, 2 occurred in Kilkenny. The 4 deaths referred to whooping-cough were 2 below the average in the three preceding weeks, and included 3 in Cork and 1 in Belfast. Of the 4 fatal cases of enteric fever, 2 occurred in Dublin, and 1 each in Belfast and Ballymena.

The deaths referred to diseases of the respiratory system, which had been 56, 71, and 60 in the three preceding weeks, were 61 in the week under notice. Of the 352 deaths from all causes, 122, or 35 per cent., occurred in public institutions, and 6 resulted from different forms of violence. The causes of 15, or 4·3 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest; in the 97 large English towns the proportion of uncertified causes last week did not exceed 0·6 per cent.

ROYAL COLLEGE OF SURGEONS OF ENGLAND: NEW CALENDAR.—A new edition of the Calendar of the Royal College of Surgeons of England has just been published. The Calendar contains a full statement of the number of candidates who were admitted to examination during the collegiate year to the Fellowship, to the first, second, and third examinations, and to the examination for the Licence in Dental Surgery respectively, together with the results of the several examinations. The Fellows of the College number 1641, the oldest of whom are Mr. Richard Barwell and Mr. Thomas Bryant, who both qualified as Fellows on May 12th, 1853. The Members' list contains 17,161 names, and the Licentiates in Dental Surgery 2635. Particulars of the various College prizes are included in the Calendar, and for the first time details are given of the Blicke Bequest "for the purchase of books for the library for ever." The first award of the Sir Gilbert Blane Medal under the revised regulations was made during the year to "the medical officer who obtained the highest aggregate marks at the examination to the rank of staff surgeon." The Calendar states that a clock for the Common Room for Fellows and Members has been presented by Mrs. M. F. King in memory of her father, the late Mr. W. C. B. Fifield, M.R.C.S., of Boston, U.S.A. It is to be noted that Mr. Frederic G. Hallett, the secretary to the Examining Board, has been given the title of Director of Examinations.

PARIS.

(FROM OUR OWN CORRESPONDENT.[1])

The Unforeseeable.

ALL the preparations of the French Medical Service with regard to the organisation of ambulance work and attendance on the wounded have been upset by the unforeseeable methods of the enemy in systematically firing on the ambulances, killing medical officers and nurses, and abandoning the wounded on the field of battle. It has accordingly been necessary to modify all our arrangements, which had been planned with a view to more modern and humane methods in warfare. Dressing stations near the firing line, collecting stations, ambulances, field hospitals, admirably organised transport for the wounded, the material of various sanitary stations provided abundantly with serums and radiographic apparatus—all might have been considered perfectly organised. But under the methods of our foes it became no longer possible to attempt to succour the wounded and, after furnishing first aid, to remove them promptly out of the battle area. A horrible condition of affairs has resulted because the entire equipment was provided for a different and more humane method of warfare. The hospital trains, so admirably equipped, in which the wounded, comfortably settled and attended by an adequate ministering personnel, would have been transported from the collecting stations to the field hospitals, have but rarely been able to render the aid one had a right to expect from them, because of the impossibility of finding them when needed in the vicinity of the fighting line with a number of conveyances adequate to the number of wounded to be removed at one time. Consequently, trains returning empty from revictualling the troops, which with admirable organisation proceed daily to the neighbourhood of the field of battle, have had to be made use of. The wounded, dressed at the field ambulances, have been piled into these trains, and it is on the échelon of railway dressing stations in the line of communications that the task has devolved of readjusting the dressings, and in the case of the wounded unable to continue the journey of diverting them to the field hospitals, there to complete the work which could only be hastily done by the ambulance. These field hospitals are always exposed to the necessity of advancing or retiring in accordance with the movements of an enemy to whose tender mercies it is highly imprudent to abandon the wounded. Naturally these railway dressing stations, intended only for a stay of a few moments by the hospital trains provided with every requisite, have had to perform a herculean task under very inadequate conditions. Little by little the personnel and material of these stations have been adapted to the new situation. The supply trains, in view of conversion on their return into extemporised hospital trains, have carried with them the personnel and material of the Medical Service. The railway dressing stations have been enlarged and provided with more complete and comfortable equipment. Now great progress has been made. The use of straw for the wounded to lie on has been long forbidden. They are placed on stretchers when they cannot sit in the railway carriages; they are provided with sufficient covering, and a hospital attendant stays in each wagon. Moreover, all the railway companies are devoting their attention to this matter. The Compagnie de l'Est has recently established a hospital train supplied with heat in all the carriages and having a communicating corridor, gas lighting, a dressing-room, water closets and lavatories, and placed on bogies. This train has been presented to a committee composed of the highest medical authorities, and others are being established.

Tincture of Iodine and the Army.

The bullet when it finds its mark is aseptic, and when it strikes direct creates a wound like that of a surgical knife, but this wound becomes invaded with great rapidity by pathogenic microbes, either from the earth or from the skin itself. The skin of soldiers who frequently are fighting for days and nights together without taking off their clothes is naturally dirty and septic. From the skin these microbes enter the wound and infect it deeply in a few hours. Swabbing the infected skin with tincture of iodine suffices to secure asepsis, but that is not the case with a wound when the microbes have colonised in it; then swabbing with iodine is powerless. But bullet wounds painted with tincture of iodine immediately after their infliction and before the application of the first dressing follow an aseptic course. It is therefore necessary that the swabbing with iodine should be immediate, and this is possible only if the soldiers themselves have the necessary material at their disposition—a difficult matter to ensure. Fortunately, this difficulty has now been solved by the manufacture of friable ampoules of tincture of iodine, made of hermetically sealed glass. Their diameter is 6 mm., their length from 6 to 7 mm. Near one end they are contracted, and the bottom of the neck which divides them into two unequal bulbs separated by a file mark. The larger bulb is held between the right forefinger and thumb, the smaller being in the left hand. A slight pressure suffices to break the ampoule between the two bulbs. The large bulb contains a soft cotton brush with which it is very easy to paint a much larger surface than that of a single dressing. Each ampoule is enclosed in a small cardboard box strong enough to protect it. The whole apparatus is not much larger than a small pencil. Professor Pierre Delbet has expressed his strong approbation of it. Thanks to private generosity, 6000 ampoules were at once sent to the firing line, and each day during the past week a similar number has been despatched and the supply will be kept up. The net cost is very slight, and it is hoped that all our soldiers will be provided with them.

Nov. 1st.

[1] We publish this letter as from Paris, whence it reached us, at our Correspondent's desire. He is not at liberty to disclose his position with the fighting forces.—ED. L.

DANGER OF SMALL-POX IN DUBLIN.—Sir Charles Cameron, superintendent medical officer of health of Dublin, has addressed a letter to the press directing attention to the large number of young persons in Dublin who are unvaccinated. For some years past the boards of guardians in the neighbourhood of Dublin and some other districts have been neglectful of their duty as to the administration of the vaccination laws, and the Local Government Board has contented itself with the occasional expression of a pious opinion on the subject. With a large number of foreign refugees arriving in Dublin the danger of the introduction of small-pox is greatly increased, and were a few cases to occur an epidemic could hardly be avoided.

Correspondence.

"Audi alteram partem."

MEDICAL RECORDS OF THE WAR.

To the Editor of THE LANCET.

SIR,—It is noteworthy that we possess no complete medical history of any of the numerous wars in which the British army has been engaged during the last century. If, for example, any one of us desires to inquire into the mortality from zymotic disease during the Crimean or even during the more recent Boer war, there is no easily accessible authoritative survey of the medical proceedings of either war to which we naturally turn for the required information. After much search we might, it is true, come across it in some excellent article contributed to the *Journal of the R.A.M.C.*, but, again, we might not, or we might hunt it down in the Annual Reports of the Director-General. But despite the abundant time and efforts which they represent Blue-books and other official documents are not literature. As likely as not the library we are accustomed to use does not stack these on its shelves. This is a defect which should be remedied in the greatest and gravest war with which our country has ever been overtaken, a war in which, taking into account the relatively small size of our army, success will very largely depend upon the reduction of preventable disease to a minimum among our troops and upon the preservation of the greatest possible number of our men in a state of health and strength upon the battle line, in which, therefore, the Royal Army Medical Corps will be a foremost factor.

But if such a history is to be written it must (1) be official; and (2) it must be based upon precise data. That is to say, from the beginning it must be clearly borne in mind by the whole medical staff that the data bearing upon each case must be so collected and recorded as to be serviceable for future reference. In the matter of case reports and records the Royal Army Medical Corps has a system that is beyond reproach. It must be remembered, however, that there are many voluntary agencies at work, hospitals equipped and manned by those hitherto unconnected with the army organisation. If any one unit fails to do its duty it renders the whole record imperfect. It is essential, therefore, that a small and authoritative body be appointed that, under the control of the Director-General, shall have oversight, collection, and preservation of hospital and other medical records. The active members of the Royal Army Medical Corps are rightly occupied in meeting the vital needs of the moment; it would be unwise to demand that certain of their number be called off to take special charge of this work. It is doubtless this very devotion of a well-worked body to immediate needs that explains the non-existence of authoritative medical histories of previous wars. The work could be accomplished equally well by medical men of standing and authority outside the service, once they had familiarised themselves with the statistical methods of the Director-General and his staff. Not mere clerks are wanted, but men possessing such status that their directions would be accepted and fulfilled by the different hospital units. There can be no lack of medical men of high standing above the military age of service who would gladly, not to say eagerly, embrace such opportunity to be of service.

Those of us who are associated with hospitals know well that there is no greater stimulus to thoroughness and efficiency on the part of the medical staff, from the highest to the lowest, than is afforded by a good system of case reporting and record. A case well reported is a case well studied; and careful diagnosis and right treatment are the natural sequence. Wholly apart from the matter of future utility, a committee charged particularly with the oversight of the medical records of the war would contribute materially to the efficiency of the medical service and the welfare of our troops.

I am, Sir, yours faithfully,

J. GEORGE ADAMI.

McGill University, Montreal, Oct. 20th, 1914.

THE WOUNDED IN THE WAR.

To the Editor of THE LANCET.

SIR,—May I venture to confirm the opinion expressed elsewhere that the care of our wounded needs immediate supplementation, not by the appointment of a few consultant diagnosticians, but in notably increasing the staffs and equipment of the base hospitals in France by sending out a number of hospital surgeons of experience? The condition in which the wounded arrive here, the statements they make of the want of surgical attention during transport, especially in trains, the fact that many cases are prejudiced (some have even died) by being put on board ship when they should have been treated at a base hospital, are all clearly due to a shortage of experienced surgeons on the other side of the Channel.

There are a number of Territorial medical officers like myself who found ourselves practically unemployed by the War Department as soon as we had completed the preparation of the base hospitals. In thereupon volunteering, as I did on August 12th, to be transferred to the Active Service List, I addressed on August 16th a memorandum to the Director-General venturing to suggest that as under the circumstances of the present war sudden pressure on the bases must be expected, the appointment of consultants as in the Boer war would not be so useful as the addition of a number of us to the Expeditionary Force as supernumerary surgeons of hospital experience who could be sent by the principal medical officer to serve base hospitals wherever the pressure was greatest. This suggestion, however, has not so far been accepted, and though naturally one is in favour of one's own view, I cannot help still feeling that our wounded are not receiving all the surgical help their splendid services deserve.

I am, Sir, yours faithfully,

Nov. 2nd, 1914. VICTOR HORSLEY.

VOLUNTEER SURGEONS FOR FRENCH HOSPITALS.

To the Editor of THE LANCET.

SIR,—You were kind enough to publish on Sept. 26th a letter of mine written at Crépy-en-Valois, in which, amongst other matters, I made an appeal for surgeons for the French hospitals near the front. To that letter I am glad to say I had the large number of 153 replies, many of them from men holding important positions in London and provincial hospitals as surgeons or anæsthetists.

My letter was copied or extracted in some French journals, with the unlooked-for result that I have become an unofficial agent for French hospitals seeking British surgeons and for British surgeons willing to give their services for periods varying from one to two or in some rare cases for three months.

I forwarded my earlier lists to the British Red Cross Society. Lord Kitchener took some of the younger men for the Royal Army Medical Corps, while the society took some others who were willing to "sign on" for at least six months. This was, of course, for the service of our own troops. I wish not to be thought as in any way criticising the splendid work done by this organisation as regards the object for which it was primarily instituted, and it is satisfactory to be able to state that, as far as I have had opportunities of judging, everything possible, even in very difficult circumstances, has been done for our wounded or sick soldiers.

During the last few weeks I have been several times asked to find French-speaking volunteer surgeons who would work for short periods under the Croix Rouge Française. The French committees who ask for this assistance are in this position: They are in large towns having in normal times a well-trained body of hospital and private practitioners. At present nearly all their operating surgeons are at the front or in the clearing hospitals close to it. The local committees are doing the general work of these large auxiliary hospitals with the help of the general practitioners in the town. In a great many cases they would be glad of the services of one or two experienced British surgeons who have some facility in French. They know they cannot afford to pay anything like a suitable fee for such services for a long period, and, to put it quite plainly, they do not want young men just qualified who may not command the confidence of the local practitioners. What they do want are men of good surgical experience who would be willing to give their services for, say, six weeks or two months at a time. They would be expected to perform such operations as were required in fresh cases, or as became necessary in the course of treatment. Also to help the local men with advice when called on and, in fact, to act as consulting and operating surgeons.

Last week I was asked somewhat urgently for two surgeons for a large town in central France where a new hospital with 300 beds is being opened in addition to some hundreds already provided. As I had no more French speakers on my list I wrote to the British Red Cross Society. I had a reply that my letter had been handed to their Anglo-French Committee, who would consider it on receiving further particulars.

The difficulties of this committee are that to a certain extent their action must be general and dictated by the policy of some central organisation, whereas what is wanted is far more flexibility which would allow of the kind of man suitable for the purpose proceeding at once to the place where it is known that his services are needed. Hitherto the policy has been to send a "unit" consisting of a surgeon and nurses who take complete control of the hospital provided by the French organisation with exclusion of the local medical men and nurses, on the plea that French surgery and nursing are not on English lines or up to our standard. I have just been informed that the committee are now willing to coöperate in sending voluntary surgeons on the lines indicated above as soon as the present strain on their organisation has slackened.

I have been requested to continue my work as an intermediary for obtaining surgical assistance in French towns on the grounds that a change in its management would cause inconvenience to many persons in France who may write to me in the present slow course of post. I shall be glad to hear from any French-speaking surgeons willing to give their services on the above lines. I am working now in connexion with the London committee of the Croix Rouge Française, through whom the necessary arrangements as to fares, &c., will be made. At the present moment I have inquiries for two more surgeons.

I am, Sir, yours faithfully,

JAMES DONELAN.

6, Manchester-square, London, W., Nov. 2nd, 1914.

PROGNOSIS IN CANCER OF THE TONGUE.

To the Editor of THE LANCET.

SIR,—In his very interesting article upon "Prognosis in Cancer of the Tongue" in THE LANCET of Oct. 24th Mr. W. Trotter states that the chief post-operative dangers are those of infection of the lungs and infection of the wound. Of the latter I am not competent to speak; the former come within my province, for they are due in all cases to the aspiration of septic material during anæsthesia. The choice of the method of administration therefore assumes much importance, and it is in this connexion that I venture to make some suggestions and some criticisms of Mr. Trotter's remarks.

Of the two methods of administration mentioned—viz., a preliminary tracheotomy or laryngotomy and plugging of the pharynx, and the intratracheal insufflation of ether—Mr. Trotter employs the first and is hostile to the second. His reason is that he thinks there is a "risk of conveying septic material into the trachea during the introduction of the tube." He does not say that this has happened, nor do I know whether his fears are justified, but it is conceivable that if the catheter (tube) is introduced by the *indirect* method it might happen. By means of *direct* laryngoscopy, however, the catheter is inserted absolutely sterile without coming into contact with anything but the interior of the laryngoscope. For this and for other reasons I have always advocated the direct method, and Mr. Trotter's remark supports my opinion. I believe moreover that not only in this country but in the United States anæsthetists almost universally use this method, and that those who started their intratracheal novitiate by using the indirect method have later abandoned it with increasing experience of its difficulties and uncertainties. Direct laryngoscopy may not appear easy at first, but it is soon mastered, and is then quite certain and without danger.

Our experience at Guy's is very decidedly in favour of intratracheal insufflation, and I do not think I exaggerate when I say that for nearly two years now no other method has been used in these mouth cases when it has been possible to obtain the services of an anæsthetist acquainted with the technique. My own experience in this particular class of operation is based upon nearly 100 cases, 48 of these having been for malignant disease in patients usually, of course, of an advanced age. No pneumonia has occurred; the anæsthesia has always

been entirely successful. My impression is that surgeons will not continue to use any method which has only a "paper reputation" to back it. Meltzer's method has made good its claims in these cases.

Infection of the lungs occurs "not very uncommonly" after a preliminary gland operation, due, as Mr. Trotter points out, to an obstructed airway and vigorous breathing leading to aspiration from the mouth. To prevent this risk Mr. Trotter has apparently to choose one of two alternatives, either to do the gland and mouth operations in one stage or to do a preliminary laryngotomy or tracheotomy at both stages. I do not think the latter is at all likely; the former is not always advisable. Some patients therefore must run the risk of pneumonia, unless suitable precautions can be taken. This is exactly where intratracheal administration is so valuable. An excellent anæsthesia is obtained and infection of the lungs does not occur.

May I in conclusion say that tracheotomy is not always so "quickly done" that it does not add appreciably to the length of anæsthesia, a serious thing in many elderly patients about to undergo an extensive operation? Whether it is as harmless as the introduction of a catheter through the larynx is hardly open to question.

I am, Sir, yours faithfully,

FRANCIS E. SHIPWAY.

Queen Anne-street, W., Oct. 29th, 1914.

SIR JAMES Y. SIMPSON AND ANÆSTHESIA.

To the Editor of THE LANCET.

SIR,—In your issue of to-day Sir William Osler, by his interesting extract from Sir J. Y. Simpson's letter to Dr. Bigelow, shows that Simpson repudiated the suggestion that he had used chloroform as an anæsthetic before ether. Indeed, he could not have done otherwise, for it is on record that he used ether for the first time in midwifery practice on Jan. 19th, 1847, whereas it was not until Nov. 4th of the same year that he introduced chloroform as an anæsthetic to his friends J. M. Duncan and Keith. A graphic account of this celebrated symposium in the "Athens of the North," when chloroform was the fare and not a Chian vintage, has been given by Professor Miller.[1] It is, however, on the question of priority in the use of ether that I venture to address you.

Simpson, according to the extract from his letter quoted by Sir William Osler, after discussing the rival claims of Jackson, Wells, and Morton, decided in favour of Morton. He therefore does not seem to have known in 1870 that Dr. Crawford W. Long, of Athens, Georgia, undoubtedly used sulphuric ether as an anæsthetic during minor operations four years and six months before it was so employed by Morton at the suggestion of Jackson, and nearly three years before Wells used it at Marcy's suggestion, and discarded it in favour of nitrous oxide. Long's first anæsthesia with sulphuric ether was on March 30th, 1842. Morton's first anæsthesia with sulphuric ether was on Sept. 30th, 1846. Wells's first anæsthesia with nitrous oxide gas was on Dec. 11th, 1844. A few days later he experimented on himself with sulphuric ether, but resolved to adhere to nitrous oxide alone. Dr. Marcy, of Martford, in January, 1845, gave the vapour of sulphuric ether to a sailor for the extirpation of a small wen on the side of his head. "The patient was insensible and the operation successful, but Marcy after this experiment still advised Wells to stick to the gas as being more agreeable and perhaps safer than ether."

For the evidence on the whole matter reference may be made to a paper by Dr. J. Marion Sims, New York, in the *Virginia Medical Monthly*, May, 1877, a reprint of which is in the library of the Royal Society of Medicine. It is fair to mention that the discovery of sulphuric either as an anæsthetic by Marcy, Jackson, and Morton was made without knowledge of Long's work. Long's fame was confined to the circle of a small country town. He waited for the opportunity—which never came—of performing some major operation under ether before communicating his experiences to the scientific world. It was not until 1853, when Morton and the friends of Wells and Jackson were clamouring for State recognition and reward for their labours, that Crawford W. Long made good his claim to priority in bestowing the gift which has since become "the blessed possession of the whole world."

I am, Sir, yours faithfully,

LEONARD GUTHRIE.

Upper Berkeley-street, W., Oct. 31st, 1914.

[1] Surgical Experiences of Chloroform, 1848-49.

APPENDICITIS IN CHINA.

To the Editor of THE LANCET.

SIR,—I have read with great interest the article in THE LANCET of July 25th last, entitled "The Geographical Distribution of Appendicitis." I would like to say that the experience of those gentlemen who have practised in China mentioned in this paper does not coincide with mine. I am in charge of a hospital with an out-patient department of 100 patients daily, and in four years I have seen two undoubted cases of appendicitis. Both cases refused operation. One died subsequently, the second recovered.

A third case was that of my chief assistant, Dr. H. H. Wang, who had appendicitis. I removed a gangrenous appendix within the first 48 hours. This gentleman, who has been attached to the hospital for 20 years, expresses the opinion that appendicitis is exceedingly common among the Chinese. Cases which he recalls now as simply peritonitis he regards as having an appendicular origin.

Moreover, I do not agree that the Chinese food and habit do not favour appendicitis. Constipation is common, and while it is true that rice is eaten in a beautifully cooked condition, at the same time raw cucumbers, raw marrows, &c., are consumed among the coolie classes who form the bulk of the nation. I am, Sir, yours faithfully,

HUGH B. KENT,
Medical Officer, Kailan Mining Administration.

Tongshan, North China, Sept. 28th, 1914.

THE WAR AND MEDICAL STUDIES.

To the Editor of THE LANCET.

SIR,—In THE LANCET of Oct. 31st there is an annotation on the above subject, in which it is said that the shortage of medical students is alarming with reference to the future supply of medical men. I should like to point out that although this shortage may be due to some extent to the war it is very largely due to the National Insurance Act, and began long before the war broke out. Under existing circumstances a young medical man without capital must either do panel work or starve, as he cannot now settle in a

working-class neighbourhood and acquire a private practice comparatively quickly. I have met many medical men who have told me that they had intended their sons for the medical profession before the Act was passed, but have now put them into some other calling. The large majority of existing medical men have been forced to take panel work or lose a large proportion of their practices, but many of these have decided that it would be cruel to put their sons into a profession in which a large portion of the work obtainable is done under the degrading conditions of the Insurance Act. I am not a politician, and I regard both parties in Parliament as equally responsible for the degrading condition of medical men under the Insurance Act, but I do not see why the war should be blamed for that for which it is not responsible.

I am, Sir, yours faithfully,

LESLIE THORNE THORNE, M.D.Durh.

Harley-street, W., Nov. 2nd, 1914.

To the Editor of THE LANCET.

SIR,—With regard to your annotation on the War and Medical Studies in THE LANCET of Oct. 31st, I should like to draw your attention to one aspect of the question omitted by you. In most of the teaching hospitals of London, and I have no doubt in the provinces, many students belonging to the Royal Army Medical Corps branch of the Officers Training Corps joined the forces as orderlies in the Royal Army Medical Corps and are now attached to the various military hospitals. Several, if not all, of these have passed their second university examination in medicine or its equivalent in the colleges, and the authorities are allowing the time spent in the wards of these hospitals to count in their curriculum. I trust, however, that facilities will be given them on the expiration of their six months to attend other hospitals and classes so as to qualify as quickly as possible, since they will be extremely useful as qualified men should the war continue after this period. I am, Sir, yours faithfully,

R. KING BROWN, M.D. R.U.I.

Bermondsey, S.E., Nov. 2nd, 1914.

OSTEO-ARTHRITIS OF THE HIP-JOINT.

To the Editor of THE LANCET.

SIR,—In a letter in THE LANCET of Oct. 10th Mr. W. J. Midelton has done us the honour of referring to a contribution by ourselves on "Osteo-arthritis of the Hip and its Diagnosis in Early or Pre-osteophytic Stages." While grateful to Mr. Midelton for his strictures we must confess that they appear to us both carping and irrelevant. In commenting on our paper he states: "I have long held that wherever there is neuritis there is always arthritis." With regard to this sweeping assertion we venture to affirm that there is nothing in our contribution to justify such an inference being drawn, and his experience must be wholly diverse from our own, and indeed for that matter from all other students of osteo-arthritis as evidenced by their writings.

The nerve pains in osteo-arthritis are referred and *neuralgic* in nature, and a genuine *neuritis*, whether of the sciatic or anterior crural trunks, is exceptionally rare. Adams in his classical treatise cites only one instance, that of the late Dr. Perceval, of Dublin. This great physician was afflicted with well-marked malum coxæ senilis and suffered severely from pain along the path of the anterior crural nerve. At necropsy it was found that this trunk was inflamed owing to its being stretched over an osseous deposit springing from the front of the right acetabulum. In rare instances, too, a similar neuritis has been produced in the sciatic trunk by exostoses projecting from the posterior rim of the cotyloid cavity, and such outgrowths in isolated cases have been removed with resulting amelioration of the neuritis. Space forbids our dwelling on the many other instances at variance with Mr. Midelton's assertion that wherever there is neuritis there is always arthritis.

We have still greater difficulty in accepting the further assertion made by him that "in osteo-arthritis the actual germs are present in the joint." Certainly, as far as we are aware, Mr. Midelton's experience on this point is unique. The only concession we feel inclined to admit here is that changes indistinguishable from osteo-arthritis sometimes supervene secondarily in joints the seat of old tuberculous, gonorrhœal, or other types of infective arthritis. But the development of such changes we would suggest is susceptible of another etiological explanation. The cases that develop these secondary osteo-arthritic changes are those types of infective arthritis in which grave disorganisation of the articular ends has occurred. As a result thereof the joint surfaces lose their normal coaptation, and a state of incongruence on the part of the articular surfaces is established. It follows, therefore, especially in the joints of the lower limb, that the static efficiency of the articulation is impaired and the lines of transmission of body weight are altered. In this way often parts of the joint surface not normally in contact become so, and *vice versâ* those usually in apposition lose touch with each other. A joint placed at such a mechanical disadvantage is obviously subjected to a series of more or less continuous slight strains or injuries. Thus, for example, in the hip the capsule undergoes torsion and the ligamentum teres which transmits the nutrient artery becomes twisted with possible interference of the blood-supply, and in this way there follows in sequence to mechanical instability a state of disorganised or deficient nutrition which in long years is evidenced by erosion and the bony outgrowths typical of osteo-arthritis. One has but to study closely specimens of this disease to note how the very location of exostoses betrays an effort on the part of nature to counteract the instability of the disabled articulation. It is impossible to dwell at length on the importance of static and mechanical agencies as etiological factors in osteo-arthritis, but the view certainly derives great support from the fact that external traumata as opposed to the internal traumatisms we are now considering play a leading rôle in the etiology of osteo-arthritis.

In accordance with his view as to the infective origin of this disease, Mr. Midelton cavils at what he terms the meagreness of our notes on treatment, laying especial emphasis on the absence of any suggestions on our part for combating the germs he believes to be responsible for the origin of osteo-arthritis. This to our mind is somewhat unfair, as the title of our paper distinctly indicates that it is devoted to the question of early diagnosis, and naturally in conformity therewith such remarks as we made were simply incidental. At the same time in justification we may draw his attention to the fact that, granting our conception of the etiology of the disease to be correct—namely, that

it is due to traumata of external or internal origin—the principles of treatment were clearly laid down. As to his own method of combating the germs, Mr. Midelton enters into no detail, and we would be much obliged if he would indicate the particular type of organism or organisms which in his view are invariably to be found in the joint cavities.

Lastly, as to Mr. Midelton's view that blistering is of great value in "early and late cases of osteo-arthritis in remedying to some extent the changes in the cord and checking the ravages of germs." On this point we admit that counter-irritation is of great value in alleviating the local and referred pains of osteo-arthritis; but in our experience direct local vesication over the affected nerve trunks is all that is necessary, and we have never found it needful to advise the prolonged blistering of the cervical and lumbar enlargements of the spinal cord as advocated originally by Dr. Latham. Neither, if we may say so, does Dr. Latham himself advocate this treatment in *osteo-arthritis*, for as far as we have understood his writings he restricts this form of treatment to *rheumatoid* or *atrophic* arthritis, a disorder, in our opinion, absolutely distinct from hypertrophic or osteo-arthritis. Mr. Midelton demurs at the absence of any allusion on our part to the changes which he affirms occur in the cord in osteo-arthritis. As far as we are aware no changes have been established in the cord in osteo-arthritis, and there is grave reason to doubt whether the cord changes in the allied condition, rheumatoid arthritis, meagre as they are, are of the nature of causal lesions.

In conclusion, rightly or wrongly, the impression made upon us by Mr. Midelton's letter is that through some misunderstanding he has misconstrued our contribution as referring to rheumatoid and not to osteo-arthritis, though we had supposed our article was sufficiently lucid to dispose of any doubt as to the exact nature of the arthritis we set out to deal with.

We are, Sir, yours faithfully,

A. BASSETT JONES.

Aberystwyth, Nov. 1st, 1914. LL. JONES LLEWELLYN.

TRAUMATIC TETANUS.

To the Editor of THE LANCET.

SIR,—I should be glad if you would kindly allow me to correct a misprint in my paper on the above subject in your issue of Oct. 31st. Referring to the relative potency of tetanus toxin (p. 1038) the computed fatal dose of which for a man of 75 kilogrammes is 0·23 milligramme, the next sentence at present reads, "As the computed dose of dried cholera venom is 4·38 milligrammes." The word "cholera" is a misprint for *cobra*.

I am, Sir, yours faithfully,

London, W.C., Nov. 2nd, 1914. M. H. GORDON.

THE WAR AND THE DISLOCATION OF PRIVATE PRACTICE.

To the Editor of THE LANCET.

SIR,—Some weeks ago when you first commented upon this dislocation in your columns I ventured to write to you on the subject, but you then doubtless for sufficient reasons apparently ignored the contents of my letter. As you have again adverted to the subject I venture to address a second communication to you, more especially as you appear in your issue of Oct. 24th to attempt to saddle the responsibility on the wrong horse. The War Office, i.e., Lord Kitchener, as long ago as August 14th in a circular letter wrote as follows:—"(W.O. Circular letter 9/Gen. No. (T.F.I.)/4087). Lord Kitchener is fully aware that the spirit of the Territorials would induce many to volunteer for foreign service, although they may have very important duties to look after in this country which necessitate their remaining at home. He would point out that home defence is a very important matter, and he does not desire that those who cannot on account of their affairs volunteer for foreign service should by any means be induced to do so, or on account of any such inability should leave the Territorial Force." And in another paragraph of the same letter he states that he hopes to be able to arrange that the training of the Territorial Force (Home Defence) may be on a system by which leave can be given for those serving to look after their urgent private affairs, somewhat on the 'commando' principle which prevailed in South Africa. Now these views seem to have been more or less embodied in Army Order 9/IX/Reserve/1436, Section 3, subsection (*a*) of Oct. 17th, wherein it is stated that where certain members of the Territorial Force require to be released from military duty, the Army Council will give authority for such release on its being satisfied that in every individual case the officer is urgently required in the public interest for employment in other than a military capacity, and in subsection (*d*) such release is to be granted for "specially urgent reasons of a public character. Such release is only operative for the period during which such emergency lasts." But while the Army Council can issue these orders, it is quite a different matter to get generals and their staffs to act in accordance with even the spirit of these official pronouncements.

Take for instance my own personal experience. I hold a post in civil life the most important duties of which it is impossible to delegate. Though for the first four weeks of the embodiment the brigade was stationed only some 28 miles from my home—an easy 80 minutes run by motor—it was only with the greatest difficulty and unpleasantness we were allowed to leave the town, though a telephone message to my house could have brought me back in less than an hour and a half. For the last two months we have been stationed some 250 miles from my home—and most of our homes—I have had only four days' leave at the end of last month on "urgent private affairs." The brigade has some ten medical officers for about 2000 men, and the general medical officer has tried to help us by always recommending our applications for leave when in his opinion he could do so, and is quite prepared to form a roster for leave which he stated could be done quite consistently with medico-military exigencies. But the brigade headquarters generally refuse the leave, occasionally granting it grudgingly as a special favour. I have, however, after a fight, now obtained four days' leave, but the permission is accompanied by instructions that I must proceed to take immediate steps to divest myself entirely of my civilian liabilities—apparently for quite an indefinite period—an undertaking which I cannot and do not propose to attempt. Moreover, I was told by one of the headquarters staff officers on this occasion that as I was not a volunteer for foreign service I need expect no further leave whatsoever during the embodiment. And the question looms largely in the matter of granting leave—it has been used and is being used as a lever to force Territorials to volunteer for foreign service; and so in spite of Lord Kitchener's and the Army Council's

instruction to the contrary, those of us who cannot volunteer for abroad are being penalised and the health and general wellbeing of the community suffer. I am in my fiftieth year, and have, as I have already said, duties which I cannot delegate and domestic responsibilities which I cannot avoid, and I hold that men with less responsibilities should go abroad before citizens of my age and circumstances.

And I submit that there is nothing in the instructions of the Minister of War or the Army Council which prevents a certain amount of leave being granted us for our own interest and in the interest of the community, and there is everything in these instructions to prevent our being penalised because we cannot volunteer for foreign service.

I am, Sir, yours faithfully,

Nov. 2nd, 1914. CITIZEN SOLDIER.

Obituary.

EDWARD McKELLAR, M.D. ST. AND., M.R.C.S. ENG., J.P.,

DEPUTY SURGEON-GENERAL, BENGAL ARMY (RETIRED).

Deputy Surgeon-General Edward McKellar, who died at Woodleigh, Preston-road, Brighton, on Oct. 27th, had passed the most active years of his life in India, where he served throughout the Mutiny campaign. Son of Dr. Dugald McKellar, he was born at Battersea, and received his early education at Clapham Grammar School and University College, London. Following in the footsteps of his father, he adopted the medical profession and became M.R.C.S. Eng. in 1849, and later was appointed assistant surgeon in the East India Company's Service. He served throughout the second Burmese war in 1852–53 with the 80th Foot, and was present at the capture of Rangoon, Martaban, and Pegu, receiving the medal and clasp for the campaign. He was surgeon in the famous Gwalior contingent which mutinied and massacred nearly all its officers, he himself having a narrow escape, and afterwards served throughout the Indian Mutiny campaign. Subsequently he became attached to the Bengal cavalry for 16 years. During the time he was in India he was in no fewer than 16 engagements. He held many important civil and military appointments and rose to the position of deputy surgeon-general.

In 1870 he graduated M.D. at St. Andrews and soon afterwards settled at Brighton, where he took a lively interest in all local affairs. For many years he was one of the representatives of his parish (Preston) on the Steyning board of guardians. He was manager of one of the Brighton council schools, and as a magistrate for the borough of Brighton proved himself efficient and kindly. He was more or less of an invalid for the last ten years of his life.

Dr. Frederick B. Power is retiring from the directorship of the Wellcome Chemical Research Laboratories. The high character of the research work that has been carried out in these laboratories under his immediate direction is well known to all our readers. Dr. Power will be succeeded by Dr. Frank L. Pyman, whose contributions to chemical science have already been important.

THE WAR.

THE LEGION OF HONOUR.

The President of the French Republic, with the approval of the King, has bestowed the decoration of the Legion of Honour on the following officers of the Royal Army Medical Corps for their gallantry during the military operations between August 21st and 30th, 1914:—*Croix d'Officier:* Major S. L. Cummins. *Croix de Chevalier:* Captain S. E. Lewis, Captain J. T. McEntire, and Captain H. S. Ranken. The last officer has died from wounds received in action.

THE CASUALTY LIST.

The toll of medical lives has been heavy during the past week. Six officers of the Royal Army Medical Corps have been killed at the front, and it is to be feared that the death-roll in the wreck of the hospital ship *Rohilla* will when finally verified contain several medical names. The following are the names of officers in the Royal Army Medical Corps which have appeared in casualty lists since our last issue:—

Killed: Captain Michael Joseph Lochrin, Captain Rupert Henry Nolan, Captain Richard Dominick O'Connor, Lieutenant Reginald Edward Porter, Lieutenant Hugh John Sladen Shields, and Lieutenant David Wylie Rintoul.

Wounded: Lieutenant J. R. Hayman.

Missing: Captain R. V. Dobey.

THE POSITION OF THE BELGIAN MEDICAL MEN AND PHARMACISTS.

A meeting was held on Wednesday afternoon at the offices of the British Medical Association to consider the position of Belgian medical men and pharmacists whose professional position has been involved in the utter ruin which has fallen upon their country, and which has destroyed the whole machinery of the medical profession and its adjuncts. The meeting was convened by Dr. Dawson Williams, Editor of the *British Medical Journal*, and Dr. Squire Sprigge, Editor of THE LANCET, in response to representations made by a provisional Belgian committee, whose representative, Professor C. Jacobs, is now in London. There were present at the meeting Sir Thomas Barlow, Sir Rickman Godlee, Sir Frederic Eve, Sir William Bennett, Dr. Frederick Taylor, Dr. Meredith Townsend, Dr. H. A. Des Vœux, Dr. George Ogilvie, Dr. Alfred Cox (Medical Secretary of the British Medical Association), Mr. Guy Elliston (Financial Secretary of the British Medical Association), Dr. S. Squire Sprigge, Dr. Dawson Williams, with the following representatives of Pharmacists, Mr. E. T. Neathercoat, Mr. F. Pilkington Sargeant, Mr. A. J. Chater, Mr. A. Hagon, and Mr. W. J. Woolcock.

Sir Rickman Godlee took the chair, and, after a brief explanation of the position by Professor Jacobs, the following committee, with power to add to their number, was appointed to make an early report on the procedure to be adopted:—Sir Thomas Barlow, President of the Royal College of Physicians of London; Sir Watson Cheyne, President of the Royal College of Surgeons of England; Dr. Meredith Townsend, Master of the Society of Apothecaries; Sir Rickman Godlee; Sir Frederic Eve; Dr. Frederick Taylor; Mr. E. T. Neathercoat, Vice-President of the Pharmaceutical

Society; Mr. Woolcock, secretary of the Pharmaceutical Society; Dr. H. A. Des Vœux; and Mr. T. Jenner Verrall, the chairman of Representative Meetings of the British Medical Association. Dr. Sprigge was appointed secretary and Dr. Des Vœux treasurer.

The instructions of the meeting to the committee were (1) to communicate with the Belgian Minister and the authorities of the Belgian Relief Fund; (2) to apply to America and other countries if desirable for assistance in the raising of any fund; and (3) to report generally.

MEDICAL RELIEF FOR BELGIAN REFUGEES.

A dispensary has been opened at 265, Strand, W.C., under the auspices of the War Refugees' Committee for the medical treatment of sick Belgian refugees. In the earlier days of the exodus assistance was given at the Aldwych Rink by Voluntary Aid Detachment, London, No. 4, of the British Red Cross Society, under the commandant, Miss Davenport, with such volunteered medical aid as the occasion required. But with the enormous influx of refugees, many of whom only speak Flemish, it was found imperative to organise the medical relief, to secure separate quarters, and to enlist the coöperation of Belgian doctors, many of whom have found asylum in this country. Accordingly, on Oct. 20th, a meeting of doctors who had already been giving their services was held, by the invitation of Dr. J. H. Philpot, at 61, Chester-square, S.W., at which the following were present: Dr. H. A. Des Vœux, Dr. Kielemoes (Melle), Mr. D. F. Maunsell, Dr. Clément Philippe (Brussels), Dr. Victor Philippe (Brussels), Dr. J. H. Philpot, Dr. H. Austin Philpot, and Miss Davenport. It was resolved that those present should constitute themselves into a provisional committee, with Dr. J. H. Philpot as chairman and Miss Davenport as secretary, which, with the authorisation of the War Refugees' Committee, should undertake the management of the refugees' dispensary, and arrangements were made for a continuous service of consultations daily from 10 A.M. to 1 P.M. and 2 P.M. to 6 P.M., and on Sundays from 10 to 11 A.M. The War Refugees' Committee has accepted these arrangements, and the dispensary, though in rather cramped quarters, is now in full working order, with an efficient staff of nurses belonging to the above-named detachment of the Red Cross. The general expenses of the institution are borne by the War Refugees' Committee, but liberal donations have been made by friends of the movement in order that medicines and dressings may be supplied free. Many Belgian doctors now in London, some of whom are well known specialists, have inscribed their names at the dispensary and offered their assistance for consultation in special cases.

PHYSICIANS AND SURGEONS IN A MILITARY HOSPITAL.

At the present time there are a number of hospitals, the General or Base Territorial Hospitals, founded on a military basis in which physicians and surgeons holding commissions in the Royal Army Medical Corps Territorial Forces are serving. There are certain conditions prevailing in them which the medical staff find very different from those they are accustomed to in their civil appointments in the large general hospitals with medical schools. The amount of work to be accomplished and the number of patients to be seen must undergo great variations, and inevitably it is frequently necessary to change the wards from medical to surgical or the reverse. Those in charge of wards, on arrival at the hospital, may find, moreover, that their patients have been removed without their knowledge. This is a necessity, for a telegram may be received from the port at which sick and wounded are being landed that 150 patients are to be received in a few hours, and beds must be found for them somewhere. If the number of wounded exceeds those of the sick some of the medical wards may have to be cleared in order to make room for them; those patients who can be sent to convalescent homes or to their friends being at short notice discharged from the hospital. Further, at a military hospital the War Office officials do not distinguish between physicians and surgeons, and although the difference is fully appreciated and acted on so far as possible by the commanding officer, if the number of wounded is very great it would be quite in accord with right principles if the physicians were asked to take charge of the lightly wounded or convalescent surgical cases. There is a certain amount of routine business which members of the staff may find irksome but which is necessary in a military hospital, such as the formation of "boards" for reports on wounded officers or the discharge of men as unfit for service. These procedures occupy much time, but must be carried out. The General Territorial Hospitals present one aspect which is of the greatest value—namely, that at any time consultations may be held between physicians and surgeons, most of whom hold a high position in their profession, and many of whom have specialised in certain aspects of medicine and surgery. The benefits conferred on the patients are obvious.

THE WRECK OF THE "ROHILLA."

The hospital ship *Rohilla*, which left Queensferry for Belgium to bring back wounded, ran on the rocks half a mile south of Whitby at 4 o'clock on the morning of Oct. 30th. All the boats but one were broken by the seas and washed ashore; the last one was launched, but was swamped when near the shore. Many of those on board were happily rescued by the lifeboats, but a considerable number of lives were lost. All the nurses on board were saved. Further official details are anxiously awaited.

NOTES FROM CHAMBÉRY.

The following is a résumé of experiences extending over some weeks in a hospital at Chambéry, and shows how, as time has gone on, the French organisation has become gradually equal to the terrible strains put upon it. On the whole our correspondent's report makes satisfactory reading, the absence of typhoid fever among the wounded being particularly gratifying.

Soon after the mobilisation order had cleared the district of its healthy male adults instructions were given to make ready to receive the wounded. The town itself is small, only numbering five or six thousand residents, but it offers exceptional facilities for auxiliary hospital accommodation, in that it comprises spacious casinos and many palatial hotels. Within a fortnight, thanks to the active coöperation of private citizens with the constituted authorities, now subordinated to military control, we were able to report 1200 available beds. There was some difficulty with regard to surgical assistance, because all the local medical men

under 45 had gone to the front, and those who remained, while equal to ordinary minor surgery, lacked experience in military emergencies. Fortunately, one or two foreign surgeons happened to be detained here by the quasi-impossibility of getting home, and they have been since reinforced by a draft of army surgeons, who have had by this time grand experience in dealing with injuries inflicted by bullets, shells, and shrapnel. So far not a single instance of bayonet wound or sword-cut has come under observation.

The staff was composed for the most part of willing but inexperienced volunteers, male and female,[1] who required to be trained to their duties, though some of them may have gone through a course of Red Cross training—roughly speaking, equivalent to a first-aid course at home. On the whole, this *ad hoc* organisation worked very well because strict aseptic precautions are of less importance when every wound is septic by the time it reaches hospital and when operations are limited to the removal of foreign bodies, bits of dead bone, &c., from septic cavities, and to amputations for gangrene or secondary hæmorrhage in septic wounds.

Speaking generally, nine out of ten wounds have been caused by fragments of shell or shrapnel balls (spherical, about the size of marbles) and only about 1 in 10 of bullet wounds. Bullet wounds with the modern conical, high-speed bullet only seem to be serious: (1) When towards the end of their course their direction is changed by contact with a bone; the impact makes them twist on their transverse axis, inflicting terrible lacerations at the aperture of exit, appearances which no doubt have given rise to the allegations respecting the use of dum-dum bullets. (2) They may traverse or enter a long bone, splitting it right up to the next joint, entailing serious consequences should any septic material such as particles of clothing, &c., have been carried in, or should the wound subsequently become infected, as was invariably the case. (3) These disastrous consequences are intensified when the bullet exerts its effects on the shoulder or hip joint. The head or neck of the long bone involved—femur or humerus—is often shattered with more or less injury to the ilium or scapula, entailing prolonged suppuration and calling for the removal of sequestra, the opening up of pockets, and the maintenance of efficient drainage. These were the cases in which secondary hæmorrhage was particularly apt to occur under circumstances rendering isolation and ligature of the main artery difficult or impossible, so that amputation was the only resort. Even so it often proved fatal. (4) When in wounds of the chest or abdomen septic material is carried in. In the absence of this complication this class of case did remarkably well. Our practice has been only to operate for the removal of foreign bodies when these had proved the starting-point of septic mischief or gravely interfered with function. The only exceptions were cases in which the bullet or metal splinter lay just beneath the skin.

The injuries inflicted by shell and shrapnel bore upon men who were either lying prone or who, on the other hand, were protected by entrenchments. The latter category comprised a large proportion of wounds of the hands and forearms, to be explained by the fact that the men were holding their knapsacks over their heads to ward off the débris of shells. Of the former, the riflemen, the upper part of the back was of course protected by the knapsack, and the effects bore mostly on the buttocks, the backs of the thighs, and legs. Grave destructive lesions of the buttocks were common. I can recall cases in which the buttock was entirely torn away, with or without part of the external genitals, or, it may be, ghastly lacerations of the thigh and formidable injuries to the pelvis. In one instance, now on the road to recovery, the shrapnel ball traversed and splintered the ilium, and could be seen in the radiogram lying inside the pelvis. The man complains of uneasiness in the outer and upper part of the iliac fossa, but nothing can be detected on palpation and he is doing well.

An interesting case was that of a man who received a bullet wound on the right side of the neck two or three inches below and a little behind the lobe of the ear, the aperture of exit being on the left of the last cervical vertebra. He felt as if struck by lightning and lay for two hours, when, as the fire slackened, his comrades pulled him back into the trench. In the evening they carried him on their rifles several miles to a hospital where the wounds, trivial in themselves, were dressed. He was found to be paralysed on the right side, with loss of sensation on *both* sides, though more marked on the right, and there was loss of sensation of the skin on the right half of the abdomen. He became (and remains) very deaf on the right side The face perspired on the left side and not on the right. He has recovered the use of the leg, and movement is slowly returning in the arm. He can now feel a prick or a pinch, but not a mere touch. The skin on the right side seems more sensitive to heat and cold than on the left. Patellar reflex much more marked on right side.

As showing the effects of mere concussion, a man, aged 35, was lying in a grange when a shell crashed through the roof and exploded. He lost consciousness for two hours, though he had only sustained a few scratches. Nevertheless he remained dull and apathetic for several days, taking no interest in what was going on around him. He complained that he was unable to read, and on testing vision it was found that though he could spell the letters of a word he was unable to utter the word; similarly, though he could write the letters of a word seriatim on dictation he could not write the word when pronounced. In the course of a fortnight these symptoms cleared up, though six weeks after receipt of the injury he still hesitated a little before naming the word.

We have had several cases of emphysematous gangrene calling for amputation. Although the adipose tissue in the flaps was yellow, offensive, and gelatinous, these cases did well in spite of some sloughing. There have been many cases with blue or bluish-green pus; they were characterised by profuse suppuration and a horribly offensive odour. Iodoform proved very effectual in these cases.

There have been several cases of tetanus, perhaps a dozen in all (out of a total of 1000 wounded), the symptoms supervening at or about the third week of injury. These were cases of extensive lacerated wounds contaminated with fragments of clothing or soil. They were given repeated doses of anti-tetanic serum, and the spasm was relieved by means of chloroform and chloral. Injections of carbolic acid (Bottini's method) were tried, but did not seem to do any good. The cases all proved fatal in from three days to ten days.

Side by side with these cases of unquestionable tetanus were two of pseudo-tetanus. I call it "pseudo" because in a couple of days the symptoms—severe general convulsions on pinching a muscle, trismus, and opisthotonos—passed off as suddenly as they were manifested, a result which could hardly be attributed to the treatment. The onset was very variable. In one there was muscular twitching for two or three days before the man developed risus and trismus. In another instance the attack was ushered in by a high temperature and diarrhœa, but in the majority trismus and risus sardonicus were the first symptoms.

There were a few cases of typhoid among the wounded, but not more than 3 or 4 per cent. Considering the conditions of life in the trenches and in the active fighting line this does not seem a large proportion. Combatants are often constrained to dwell for days together in the trenches, which serve as dining-room, drawing-room, kitchen, and water closet in one! Several men told me that having crept out of the trenches for sanitary purposes the enemy were inconsiderate enough to snipe them.

[1] The French Army Medical Service, be it remarked, is made up of surgeons *de carrière* who undergo a special course of training at the Val-de-Grâce medical school, and of civil practitioners attached to the reserve and Territorial regiments who become army surgeons on mobilisation.

THE CARE OF THE GERMAN WOUNDED.

The Medical Chief of the German army, Dr. von Schjerning, has issued an official report covering the first two months of war only and referring to the western field of battle. The organisation and the material in aid of the wounded was, he reports, all that could be expected under the specially difficult circumstances due to the great rapidity of march, difficulty of transport, and extraordinary amount of wounded. In one week some 40,000 to 50,000 men with minor wounds were sent home. Often the fields of battle could not be searched for days. All those who could bear transport were sent back to Germany on foot, by carriage, or motor ambulances, or in the luggage vans available. All the trains bringing food and ammunition to the

front returned filled with wounded. These severely hurt were treated in field ambulances or war hospitals near the battlefields. Dysentery and typhoid fever occurred only sporadically. The wounded everywhere were well cared for, and he praises warmly the doctors and ambulance nurses. 9000 medical men were with the troops at the first, west and east, and in the first two months 74 medical men were in the casualty lists.

THE ORDER OF ST. JOHN OF JERUSALEM IN ENGLAND, AMBULANCE DEPARTMENT.

An appeal is being made by the ambulance department of the Order of St. John of Jerusalem for funds to extend its work amongst the wounded in the war by means of a shilling collection. Already 150 hospitals and convalescent homes have been established and staffed under the auspices of the order; 209 medical men and nurses have been sent out to the front; over 5500 orderlies have been despatched to the expeditionary forces, or distributed amongst the ships and naval and military hospitals; and 748 cases and bales of medical stores and supplies, including 56,000 articles of clothing, have been sent out to the sick and wounded. A depôt for the convenience of the troops has also been established at Southampton, where they can obtain food and medical assistance day and night, and a number of motor ambulances are being despatched to carry the wounded from the front to the base. The offices of the fund are at Marconi House, Strand, where accommodation has been kindly placed at the disposal of the ambulance department by the Marconi Wireless Telegraph Company.

OBITUARY OF THE WAR.

GEORGE HENRY CHISNALL, M.B., B.S. LOND., F.R.C.S. ENG.,

LIEUTENANT, ROYAL ARMY MEDICAL CORPS.

A former teacher writes:—"Perhaps in nothing is the waste of war more apparent than in the loss of those who after years of patient study have slowly perfected themselves in the art of healing only to be blindly crushed at the very outset of their career. The thoughts of many at the London Hospital must have yielded some such reflection on hearing of the death at Poperinghe of George Henry Chisnall, killed by shell fire on Oct. 24th while attached to the 1st Cameron Highlanders. Not only was Chisnall, as his academic distinctions prove, a student of outstanding ability, but he combined with a very thoughtful temperament an originality of outlook, an industry and a tenacity of purpose which persuaded his many friends that he would some day take high position in his profession. The essay on 'Fractures of the Upper Part of the Humerus and their Treatment' with which he won the Jonathan Hutchinson prize at his college was regarded as an earnest of a steady outflow of original work in the future. Personally he was noted for an imperturbable serenity of mind and a geniality of manner which made him beloved by all who knew him. Having held almost all the resident appointments in the gift of the London Hospital, he volunteered for service in the Royal Army Medical Corps at the beginning of the war, with the result which is now so deeply deplored. There only remains to us a memory, and a hope that after all Death may not be the gaunt spectre we imagine. To the Greeks it will be remembered Θανατος was a thoughtful youth of not unkindly aspect; right in so much, perhaps they were also right in this."

BRIAN COLDEN ANTILL POCKLEY, M.B., CH.M. SYDNEY,

CAPTAIN AND SURGEON, AUSTRALIAN NAVAL RESERVE.

The tragic circumstances under which Captain Brian Colden Antill Pockley, surgeon in the Australian Naval Reserve, met his death on duty with a landing party at Herbertshohe, in German New Guinea, were in themselves of his own unwitting creation through an act of devotion to duty. It seems that Captain Pockley was called to attend to a wounded sailor, and finding that it would be necessary to send him to the rear, covered the sailor bearing him with his own Red Cross coat to indicate that he was engaged on a work of mercy and to procure him immunity from attack. Captain Pockley continued in his shirt sleeves to attend to another wounded man, when he was deliberately shot through the chest by a German officer. This officer was subsequently captured and tried by court martial on one of the warships for a breach of the Geneva Convention. He was, however, able entirely to satisfy his judges that, owing to the absence of any distinguishing mark, he had regarded Captain Pockley as a combatant, not recognising the work on which he was engaged, and so was exonerated from that worst of treacheries, treachery against the Red Cross, the one outstanding humane feature of modern warfare among civilised peoples. Captain Pockley was only 24 years of age, a brilliant scholar, an athlete, most popular with his school and college, and beloved by all who knew him. He graduated only this year at the University of Sydney as M.B., Ch.M. He was the son of Dr. Antill Pockley, of Sydney, who was President of the Australasian Medical Congress when it was held in Sydney in 1911.

DAVID WYLIE RINTOUL, M.B., CH.B. ST. AND.,

LIEUTENANT, ROYAL ARMY MEDICAL CORPS.

Lieutenant David Wylie Rintoul, who was killed in action on Oct. 21st in his twenty-sixth year, was the elder son of Mr. D. Rintoul, of College-road, Clifton. He was educated at Clifton College, and graduated M.B., Ch.B. of St. Andrews University in 1912. During 1912 and 1913 he filled the posts of house surgeon and house physician at the Bristol General Hospital. On resigning to join the Royal Army Medical Corps he received the thanks of the committee of that institution for the manner in which he had performed his duties. Lieutenant Rintoul received his commission early this year, and was attached to the Eastern Command before the outbreak of war.

THE BRITISH RED CROSS SOCIETY.—The summary of work for the week ending Nov. 4th states that the number of auxiliary home hospitals accepted by the War Office to date is 306, containing beds for 10,235, including 2158 beds accepted during the past week, and distributed among the army commands as follows: London, 659; Southern, 3051; Aldershot, 609; Eastern, 3032; Northern, 1506; Western, 1139; Irish, 189. A number of Voluntary Aid Detachments are being utilised in connexion with these hospitals. At the British Red Cross Hospital, Netley, this week it is hoped to have most of the nurses in their own huts, which will give a certain amount of spare accommodation for patients. At present four huts are full of soldiers from the Expeditionary Force and three with wounded Indians of the Expeditionary Force. A regular supply of fruit would be very acceptable for the native patients.

Gifts should be addressed to the Commandant, Sir Warren Crooke-Lawless,

Since last Tuesday evening 83 motor-cars have been despatched to the various centres; these included two lorries and two touring cars, the rest being motor ambulances. As far as offers of cars are concerned there are still a large number of people willing to provide a complete ambulance, and there are many others who are offering their cars for conversion. These, for the time being, have been asked to be placed on the reserve list. Chauffeurs have been registered each day, and at present sufficient are on the books to supply needs as they arise. When the appeal first appeared in the *Times* there were many people who immediately took steps to raise a local appeal for funds to purchase a motor ambulance. These will be accepted when the definite offer comes, but it is hoped that donors will allocate their cheques to running expenses rather than to additional cars. From Oct. 19th to Oct. 27th, inclusive, 9722 wounded were removed from trains to hospitals by the cars of the society, and 2000 were removed from hospitals to ships. From Oct. 15th to Oct. 27th, inclusive, the No. 2 convoy cars at Bethune carried 4116 wounded from the field hospitals to the clearing hospitals.

On the undermentioned dates the personnel was posted for service at the places named: Oct. 29th, Serbia, 6 doctors and 12 orderlies. Oct. 31st, Rennes, 6 doctors and 12 dressers. Nov. 1st, Boulogne, 8 doctors; Rouen, 2 dressers. Nov. 2nd, Boulogne, 4 doctors. Nov. 3rd, Boulogne, 2 doctors and 15 dressers. Oct. 31st, Rennes, 28 nurses. Nov. 1st, Boulogne, 30 nurses. The following nurses were also supplied for home service: Oct. 30th, Mansfield, 4. Oct. 31st, Ongar, 3; Southampton, 6; Wigan, 1. Nov. 2nd, Bristol, 1; Louth, Lincolnshire, 1; Margate, 2; Winchester, 2. Nov. 3rd, Bicester, 1. Gerrard's Cross, 5; Perth, 1; Reigate, 3. 5525 collecting boxes have been issued and 1454 returned, and the sum of £3083 13*s.* 3*d.* has been collected to date. No further boxes are to be issued for use in the streets or public places.

The following stores and transport have been despatched during the past week: Boulogne, 470 cases; Rouen, 197 cases; Calais, 96 cases; Dunkirk, 60 cases; St. Malo, 21 cases; Dinard, 7 cases; Paris, 3 cases; Tarbe, 3 cases; Serbia, 37 cases. Total, 894 cases and bales. These represent hospital stores, garments, and supplies of every sort and kind. The demands made from Boulogne and Calais have been exceptionally heavy, owing to the large amount of wounded arriving at these two places. Stores at Rouen have been largely replenished. Five ambulance ships have been regularly supplied with garments and comforts for the wounded crossing the channel. 70 hospitals in the British Islands have been supplied with what they have requisitioned for. Medical stores to the amount of £691 6*s.* 6*d.* have been purchased.

JOINT RED CROSS COMMITTEE.—The joint committee of the Order of St. John of Jerusalem in England and the British Red Cross Society which was announced in these columns last week has now met, and confirmed the election of the Hon. Arthur Stanley as its chairman and Sir H. C. Perrott as its vice-chairman.

EDINBURGH AND THE WAR.—At the half-yearly meeting of the University Court held on Oct. 30th the convenor of the business committee referred to the part taken by the University of Edinburgh in the war. It must, he said, be a matter of the greatest gratification to all her sons and daughters to know that their University had made a noble and magnificent response. There were no fewer than 12 members of the University staff at present serving in His Majesty's Forces. Principal Sir William Turner said with reference to the compilation of a roll of honour that several of his colleagues who had taken a prominent part in connexion with the arranging for the entry of these graduates and students into the military forces had already commenced the formation of a list, but it was obvious that it would not be easy to trace some 700 persons, and there would be a difficulty in obtaining a full list.—On the same afternoon a train arrived at Princes-street Station with 64 Belgian wounded on board. A staff of stretcher-bearers and a fleet of motor ambulances and motor-cars conveyed the patients to Craigleith Hospital. All the men had been in the battles of Nieuport and Dixmude, and as indicating the hard nature of the fighting the arrivals, except for some half-dozen men, were stretcher cases.—At a meeting of the Edinburgh Royal Infirmary managers held on Nov. 2nd, Lord Provost Inches presiding, Mr. Crole, K.C., referring to the recent visit to the infirmary of Sir Spencer Ewart, K.C.B., commanding the forces in Scotland, and Admiral Sir R. S. Lowry, K.C.B., senior officer on the coast of Scotland, said the infirmary was taking the wounded sailors and soldiers on the same footing as ordinary patients; the War Office and Admiralty were not charged anything for the institution's care of them. Some of the wounded had had their clothes on for six weeks when they arrived at the infirmary. One of them, a reservist in the Gordon Highlanders, had mentioned that from the time he had left Aberdeen till he had been put to bed in the infirmary he had never had his clothes off. One could well understand the condition such clothes were in, and the consequence was that those soldiers required a new outfit on leaving the institution. The infirmary had no clothes to give them, but he was glad to say that on application to the Lord Provost's committee they were promptly supplied with clothes of all sorts.

PROFESSIONAL CLASSES WAR RELIEF COUNCIL.—In our last issue we announced the formation of this council, and indicated its objects and proposed methods. We are now asked to state that Mr. J. Pierpont Morgan has generously lent to the council Nos. 13 and 14, Prince's-gate, S.W., for a maternity nursing home for the period of the war, and that furniture and equipment are needed—house- and table-linen, blankets, cutlery, plate, screens, bassinettes, and baby-clothes. Offers of help in the way of gifts or loans should be made in the first instance to Mrs. Hills, 32, Prince's-gardens, London, S.W.

The home will have a voluntary medical staff of many well-known medical men and women, and a voluntary nursing staff of excellent certificated nurses. There is in it every requirement for perfect comfort and good nursing, and here the wives of professional men will be received throughout the war, and the period of distress ensuing, for the sum of two guineas a week during the time they are in the home, which sum will be absolutely inclusive. The council hope that medical men will assist them in making the existence of the home known to their patients. Many doctors are, it is well known, generously giving their services free to women who find themselves unable to meet the expense; but this generosity cannot continue on any large scale without seriously dislocating their own profession, therefore the establishment of this home should be the solution of many difficulties. It is also hoped in time to establish similar homes in the provinces, and this might well be done by local effort, in imitation of, and in coöperation with, the council's home in London.

The home will be open both to those who are recommended through the professional institutions and societies, and to those who apply direct to the Council. In the former case the weekly fee may be paid by the benevolent fund of the husband's institution, in the latter either by the patient or friends, or by the central fund of the council augmented by the special maternity fund which has been raised for the purpose by the members of the Eugenic Education Society.

The committee under which the maternity aid scheme is run consists of the following:—Dr. Mary Scharlieb (chairman), Sir Francis Champneys, Dr. H. C. Barnes, Dr. Maud Chadburn (senior obstetrician, New Hospital for Women), Mrs. Theodore Chambers, Mr. Chatfield Clarke (president Surveyors' Institution), Miss Graeves (matron, City-road Lying-in Hospital), Muriel, Lady Helmsley (chairman, London Day Nurseries Association), Dr. H. Simson, Dr. Samuel West (treasurer, Royal Medical Benevolent Fund), Dr. Florence Willey (Royal Free Hospital for Women), and Mrs. Hills.

SOLDIERS AND VENEREAL DISEASE.—A committee of the Liverpool Medical Institution, acting in concert with an influential lay committee, have entered upon a campaign against venereal disease. With the special object of warning young soldiers against the dangers which beset them from this cause the committee have now published two specially written pamphlets. One is entitled "The Dangers of Venereal Diseases," being an instructive inaugural address by Dr. Charles J. Macalister, chairman of the medical committee, and the other entitled "Some Dangers a Soldier may Avoid," written in a very simple and

direct style, by Dr. R. W. MacKenna, honorary treasurer. The committee are anxious to interest commanding officers, chaplains, medical men, and others who are in a position and who would undertake to distribute these pamphlets among those for whom they are intended. They will be supplied free so far as funds admit. Correspondence is invited, and letters addressed to the Librarian, Liverpool Medical Institution, will receive attention.

BRITISH NURSES FOR FRENCH MILITARY HOSPITALS.—An organisation under the title of "The French Flag Nursing Corps" has received a communication from the French Minister for War, dated Sept. 29th, asking for 300 fully trained British nurses to take service in the French military hospitals in the districts of Rouen, Le Mans, Rennes, and Nantes. Through the instrumentality of Sir Thomas Barclay and his niece, Miss Grace Ellison, a committee has been formed, which has been authorised by the Minister of War for France to select the nurses to be sent out and to undertake the necessary organisation. The French Ministry of War (Service de Santé section) has undertaken all financial responsibility for the nurses' salaries, travelling expenses, &c., the preliminary financial arrangements being in the hands of the French Consulate in London. Suitable provision has also been made for the supervision and comfort of the nurses. One detachment of nurses has already been despatched, and is now at work among the wounded in the military hospitals at Rouen, and further detachments are being sent out weekly as required. Applications from fully qualified nurses, particularly from those who can speak French, may be sent to Lady Barclay, 60, Nevern-square, S.W., or to Mrs. Bedford Fenwick, 431, Oxford-street, W. The medical advisers to the committee are Dr. R. Murray Leslie and Dr. J. Dundas Grant.

CHLOROFORM IN FRANCE: AN ALLEGED SHORTAGE.—In a letter which has appeared in the lay press it is stated that in various parts of France the hospitals for our wounded allies are in need of chloroform, and that amputations as well as minor operations have had to be performed without anæsthesia. We have not been officially informed of any such shortage of anæsthetics on the part of medical men working under the Croix Rouge, and we trust that the difficulty, if it exists, in securing adequate supplies of chloroform in France is at most only local and temporary. British manufacturers would, we are certain, take instant steps to meet any deficiency which was brought to their notice through responsible sources.

ASIATIC CHOLERA IN AUSTRIA.—According to official reports issued in the *Wiener Medizinische Wochenschrift* of Oct. 18th, 157 cases of Asiatic cholera all bacteriologically examined occurred from Oct. 6th to 12th in the Austrian empire. The first cases have invariably been imported through soldiers or fugitives from the seat of war. They refer to a few isolated cases in some 40 localities. Larger numbers were only reported from Budapest (6), Vienna (16), Neer-sandeck (16), and Gorlice (20). At the same time the hospitals of Vienna announced 27 cases of enteric fever and 175 of dysentery as having occurred from Oct. 4th to 10th.

MEDICAL ATTENDANCE ON DEPENDENTS OF IRISH SAILORS AND SOLDIERS.—The Irish committee of the British Medical Association has addressed a request to medical practitioners in Ireland to join in a scheme for giving free medical attendance to the dependents of sailors and soldiers on active service with His Majesty's forces. The details of the scheme are the same for Ireland as for Great Britain.

THE INTERNATIONAL BOARD OF HEALTH.—We learn from a correspondent in Constantinople that this Board has practically ceased to exist as an international body, and is sitting as a Turkish body without foreign delegates.

THE UNIVERSITY OF PARIS AND BELGIAN STUDENTS.—The authorities of the University of Paris have decided unanimously that the students who had matriculated and entered any Belgian university before the war could be received as duly matriculated students at various faculties of the University of Paris without further form. Belgian students at secondary schools will also be taken at the University of Paris if they have fulfilled the conditions precedent to matriculation and entry at one of their own universities. Those who have no school certificates in proof of this position can have recourse to diplomatic or consular agency in support of their claim to admission.

Medical News.

UNIVERSITY OF OXFORD.—At a Congregation held on Oct. 29th the following degree was conferred:—

M.D.—Arthur Duncan Gardner, University College.

UNIVERSITY OF CAMBRIDGE.—At a Congregation held on Oct. 31st the following medical degrees were conferred:—

M.D.—A. Felling, Pembroke; and A. Abrahams, Emmanuel.
M.B., B.C.—C. G. H. Campbell, St. John's.
M.B.—R. A. Ramsay, Caius.
B.C.—F. G. Lescher, Caius.

UNIVERSITY OF LONDON.—COLONIAL EXAMINATIONS.—At the First Examination for Medical Degrees held recently the following candidates were successful:—

CEYLON (COLOMBO).

John Robert Blazé and Simon Reginald Gunewardene, Ceylon Medical College.

NOBEL PRIZES.—It is now reported that the conferring of these prizes for the year 1914 for literature, medicine, chemistry and physics will be postponed until next year. Our Paris Correspondent referred to the prizes on Feb. 14th last, indicating that the French choice had fallen upon Professor Bouchard.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—Dr. W. J. Howarth, medical officer of health of the City of London, will read a paper at the next meeting of this society on Nov. 13th on the subject of the Marking of Meat. The meeting will be held at 1, Upper Montague-street, Russell-square, London, W.C.

QUEEN'S UNIVERSITY OF BELFAST.—In connexion with the will of the late Mr. W. Gibson, chairman of the Goldsmiths' Company, Regent-street, London, and of Belfast, a sum of £10,000 has been left upon trust for investment to form a "Gibson Scholarship Fund" at Queen's College, Belfast, of which the income is to be applied in the encouragement of education in agriculture and the management of land for profit by the establishment of "Gibson Scholarships" for resident undergraduates of the College, being sons of farmers in the counties of Antrim and Down. When the University was established Mr. Gibson presented a silver mace. By his will he has bequeathed £1000 to the Royal Victoria Hospital, Belfast, for a "Sarah McLees Cot," in memory of his late niece. On Oct. 21st a meeting was held in the Great Hall of the University to consider the call of duty in the present national exigency. Speeches were made by senators and professors urging the students to go to the front. A resolution was passed recommending that efforts should be made to have a special University company organised in one of the local service battalions, and that all members of the University who are fit for military service should consider the propriety in the present emergency of suspending their customary amusements and either joining the proposed University company or applying for admission to the officers' training corps. A movement is also on foot to form a Queen's University veterans' corps, the age-limit of those joining to be between 38 and 60 years, and graduates and other alumni bordering on these ages have been asked to attend a meeting in the University on Oct. 29th to discuss the matter.

ROYAL MEDICAL BENEVOLENT FUND.—At the last meeting of the committee 37 cases were considered and grants amounting to £303 voted to 32 of the applicants. The following is a summary of the cases relieved:—

Daughter, aged 42, of M.R.C.S. Eng. who practised at Shrewsbury Training for rescue work. Mother died recently and the little income she had was only for life. Applicant required a little help until able to commence work. Voted £5.—Widow, aged 42, of L.R.C.P. & S. Irel. who practised in Ireland and Australia. Usually earns her own living

as a teacher of languages; was in Berlin at a post when the war broke out and had to return to England without her belongings or money. She proposed to go to Madrid where she could obtain work. Previous grant, £10. Voted £5 as gift and £7 as a loan.—Widow, aged 66, of M.R.C.S. Eng. who practised at Notting Hill. Has five daughters, one a trained nurse who has had to give up her post to nurse her mother who is suffering from malignant disease in the breast. Try to make a little by letting room. Relieved 14 times, £176. Voted £5.—M.R.C.S., aged 81, who practised at West Kensington. Has the old-age pension and a pension from another charity. Is blind. Has four children, the eldest of whom is practically blind and the others unable to help. Relieved twice, £14. Case referred for further inquiry and the sum of £5 placed at the disposal of the visitor.—Widow, aged 63, of M.B.Glasg. who practised at Carnarvon. Unable to work and only income £16 from investments and 5s. per week temporarily from brother. Three children married and unable to help. Relieved twice, £12 Voted £12 in 12 instalments.—Widow, aged 46, of L.S.A. Eng. who practised at Leyton. Left with five daughters, ages 9 to 16 years. Very delicate and only able to do very light work. Hopes to take in paying guests and wishes to remove to a more suitable house. Voted £10 towards removal expenses.—Widow, aged 39, of L.R.C.S. & P. Irel. who practised in Monmouthshire and New South Wales. Acts as working housekeeper at about £15 per year and her youngest child is allowed to live with her. Eldest child, aged 12 years, adopted by grandparents. Wants assistance towards the education of daughter aged 11 years. £10 voted through the Guild who were also going to assist.—Widow, aged 67, of M.B., B.S. Lond. who practised at Islington. Only very limited means. Eldest son used to help, but owing to the falling off of his business unable to continue. Endeavouring to obtain an Epsom College pension. Voted £12 in 12 instalments.—Daughter, aged 48, of M.D. Glasg. who practised at Glasgow. Endeavours to make a living by letting rooms at a seaside resort, but owing to short season in consequence of the war is unable to meet her expenses. Voted £10.—Daughter, aged 35, of M.R.C.S. who practised at Streatham. Very delicate and only a few pounds per annum from an investment. Supplements this by painting, but no market for pictures at present. Voted £5.—Widow, aged 58, of L.R.C.P. Dub. who practised in London. Endeavours to make a living by taking boarders and nursing mental cases, but in consequence of recent illness has not been able to attend to this thoroughly. Voted £10.—Daughter, aged 56, of M.R.C.S. Eng. who through ill-health was unable to practise. She is suffering from carcinoma of the breast and too ill to work. Only income £16 10s. per annum. Voted £12 in 12 instalments.—Widow, aged 60, of M.D. Glasg. who practised at Burnham and was an annuitant of the Fund. She is a confirmed invalid and unable to help herself. Only small income provided by friends. Voted £12 in 12 instalments.—Widow, aged 35, of M.R.C.S. Eng. who practised at Bexhill-on-Sea. One child 4 months old. Left totally unprovided for. Voted £3 and the case referred for report.—Widow, aged 35, of M.R.C.S. Eng. who practised at Monmouth and was killed at the front. Widow left with two children, 3½ and 1 year. Voted £25.—Widow, aged 58, of M.R.C.S. Irel. who practised at Newnham-on-Severn and died two years ago, leaving widow and family penniless. Two daughters, one of whom is a nurse at the front and one son at the front. Only income 15s. per week allowed by children. Relieved once, £10. Voted £10 in two instalments.—Widow, aged 42, of M.B. Edin. who practised at Sheffield. Health very bad and unable to obtain suitable employment. One son being educated by grandparents. Promise of light work when a little stronger. Relieved once, £10. Voted £10.—Widow, aged 49, of M.R.C.S. Eng. who practised at Bexhill. Tries to earn a living by taking boarders, but it requires six to make it pay and only has three at present. Two daughters, ages 19 and 10½; eldest a clerk who is only able to contribute £12 per annum. Relieved twice, £20. Voted £10.—Daughter, aged 60, of M.R.C.S. Eng. who practised at Hackney. Applicant is blind. Only income an annuity from another society and £12 from friends. Relieved four times, £34. Voted £12 in 12 instalments.—Daughter, aged 61, of M.D. Lond. who practised in London. Is quite blind. Only income a pension of £20 from the Blind Society. Relieved twice, £18. Voted £12 in 12 instalments.—Widow, aged 65, of L.R.C.P. Edin. who practised at Port Carlisle. Suffers from cardiac asthma and recently operated on for carcinoma of the breast. Left without any means, and of the five children only youngest daughter able to help with 10s., for which she has her board. Relieved once, £12. Voted £12 in 12 instalments and referred to the Guild.—Widow, aged 59, of M.D. Dub. who practised at Acton. Endeavours to earn living by taking boarders, but has not been successful lately. Son, who usually pays rent for her, unable to continue owing to war. Relieved once, £10. Voted £5.—Widow, aged 55, of M.R.C.S. Eng. who practised at Kensington. Successfully earned a living of late by taking boarders, but the four she recently had have all joined the army so she is now without. Relieved once, £10. Voted £10 in two instalments and referred to the Guild.—Widow, aged 63, of M.R.C.S. Eng. who practised at Newtown, North Wales. Very poor health and heart trouble. Eldest son abroad has in the past paid her rent, but is now unable to do so on account of ill-health. Six children, the youngest unable to work on account of ill-health and the others unable to help. Relieved six times, £55. Voted £15.—Daughter, aged 52, of L.R.C.P. Lond. who practised at Birmingham. Endeavours to make a living by letting rooms, but owing to short season has not made much this year. Eyesight very bad. Relieved three times, £32. Voted £12 in 12 instalments.—Daughter, aged 55 years, of M.R.C.S. Eng. who practised in London. Suffers from chronic glaucoma and general bad health. Only income £24 per year. Relieved six times, £55. Voted £12 in 12 instalments.—Widow, aged 52, of L.R.C.S. Edin. who practised on the West Coast of Africa. Endeavours to earn a living by letting rooms and nursing. One invalid daughter at home and two sons abroad unable to assist. Relieved three times, £36. Voted £12 in 12 instalments.—Daughter, aged 68, of M.R.C.S. Eng. who practised at Keynsham. All money lost by the foreclosure of mortgages. Tries to earn a little by painting, but has found it difficult recently in obtaining clients. Relieved once, £12. Voted £18 in 12 instalments.—Widow, aged 55, of M.R.C.S. Eng. who practised at Donhead, and who had been a recipient of help from the Fund. Unable to work. Has one daughter unable to assist. Since husband's death a sister has assisted her, but cannot now continue. Voted £2 and referred to the Guild for report.

Contributions may be sent to the honorary treasurer, Dr. Samuel West, 11, Chandos-street, Cavendish-square, London, W.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BANBURY, R. A., M.R.C.S., L.R.C.P. Lond., has been appointed Assistant Medical Officer to the Woolwich Board of Guardians.

BEGG, R. CAMPBELL, M.B., Ch.B. Edin., has been appointed Resident Surgeon to the Surgical Out-patient Department at the Edinburgh Royal Infirmary.

CARGIN, HERBERT M., M.D. Edin., D.P.H., has been appointed Medical Officer of Health of West Hartlepool.

DICKIE, J. K. MILNE, M.D., F.R.C.S. Edin., has been appointed Special Clinical Assistant to the Ear and Throat Department at the Edinburgh Royal Infirmary.

ESCHWEGE, F. S., M.R.C.S., L.R.C.P. Lond., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Rowfant District of the county of Sussex.

EWART, G. A., F.R.C.S Eng., has been appointed Assistant Surgeon to St. George's Hospital.

FEDDEN, W. FEDDE, F.R.C.S. Eng., has been appointed Surgeon to St. George's Hospital.

FULLARTON, JAMES, M.B., C.M. Glasg., has been appointed Medical Officer for the Parishes of Colvend and Kirkbean.

HALLEY, T. C., M.B., Ch.B. Aberd., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Stanford-le-Hope District of the county of Essex.

HENRY (MACENRI), JOHN P., M.D., B Ch. Dub., has been appointed Professor of Ophthalmology and Otology in University College, Galway

ROUSE, T., M.D. Irel., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Sligo District of the county of Sligo.

HUNTER, R., L.R.C.P. & S. Edin., L.F.P.S. Glasg., has been appointed Medical Officer of Dodworth.

MATHEWSON, G. D., M.B., Ch.B. Edin., F.R.C.P. Edin., has been appointed Temporary Assistant Physician at the Edinburgh Royal Infirmary.

NIMBKAR, V. D., L.R.C.P. & S. Edin., L.R.F.P.S. Glasg., has been appointed Ophthalmic House Surgeon at the Leeds General Infirmary.

NOEL, H. L. C., M.R.C.S., has been appointed Resident Assistant Surgeon to the Marchioness of Bute's Naval and Military Hospital, Mount Stuart, Isle of Bute, N.B.

REID, M. A., M.B., F.R.C.S. Edin., has been appointed Clinical Assistant in the Ear Department at the Edinburgh Royal Infirmary.

RODGER, T. RITCHIE, M.B., F.R.C.S. Edin., has been appointed Honorary Resident House Surgeon in the Eye Wards at the Edinburgh Royal Infirmary.

SOMERVILLE, CHARLES, M.B., Ch.B. Edin., D.P.H., has been appointed Interim Medical Officer for the Burgh of Bonnyrigg.

WHAITE, JOHN HENRY, M.D., B.Ch. Dub., has been appointed Medical Officer for the Heavitree District by the Exeter Board of Guardians.

WYLDE, R. P., L.M.S.S.A Lond., has been reappointed Medical Officer of Health for the Hollingworth Urban District Council.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

ALTON, HANTS, LORD MAYOR TRELOAR CRIPPLES' HOSPITAL AND COLLEGE.—Two Female Assistant Medical Officers for six months. Salary at rates of £120 and £100 per annum, with board, residence, and laundry.

BELFAST MUNICIPAL SANATORIUM, Whiteabbey.—Resident Medical Superintendent. Salary £500 per annum, with board and residence.

BEXLEY, KENT, LONDON COUNTY ASYLUM.—Locum Tenens Medical Officer. Salary 6 guineas per week, with quarters, board, and washing.

BIRKENHEAD BOROUGH HOSPITAL.—Junior House Surgeon. Salary £100 per annum, with board and laundry.

BIRMINGHAM CITY HOSPITAL, Lodge-road.—Assistant Resident Medical Officer. Salary £200 per annum, with board, residence, &c.

BIRMINGHAM CORPORATION.—Female Medical Officer for Infant Consultation Work. Salary £300 per annum.

BIRMINGHAM GENERAL HOSPITAL.—House Governor and Secretary. Salary £500 per annum.

BIRMINGHAM UNION.—DUDLEY-ROAD INFIRMARY: Third Assistant Medical Officer and Fourth Assistant Medical Officer. Salary at rate of £170 and £160 per annum respectively. ERDINGTON INFIRMARY AND COTTAGE HOMES: Assistant Medical Officer. Salary at rate of £200 per annum. SELLY OAK INFIRMARY: Assistant Medical Officer. Salary at rate of £150 per annum. Apartments, rations, laundry, and attendance in each case.

BOLTON INFIRMARY AND DISPENSARY.—Second House Surgeon. Salary £120 per annum, with apartments, board, and attendance.

BRADFORD CITY EDUCATION COMMITTEE.—Assistant School Medical Officer. Salary £350 per annum.

BRADFORD ROYAL INFIRMARY.—House Surgeon, unmarried. Salary £100 per annum, with board, residence, and washing.

BRADFORD ST. LUKE'S HOSPITAL AND UNION HOUSE.—Assistant Resident Medical Officer, unmarried. Salary £150 per annum, with rations, apartments and washing.

BRISTOL GENERAL HOSPITAL.—Obstetric Officer and House Surgeon to Special Departments for six months. Salary at rate of £120 per annum, with board, residence, &c.

CANTERBURY, KENT COUNTY ASYLUM, Chartham.—Junior Assistant Third Medical Officer, unmarried. Salary £250 per annum, with quarters, board, washing, &c.

CARDIFF, KING EDWARD VII. WELSH NATIONAL MEMORIAL ASSOCIATION.—Assistant Tuberculosis Physicians. Salary £300 per annum.

CARSHALTON, SURREY, QUEEN MARY'S HOSPITAL FOR CHILDREN.—Assistant Medical Officers. Salary at rate of £250 per annum, with board, lodging, and washing.

CHICHESTER, ROYAL WEST SUSSEX HOSPITAL.—House Surgeon, unmarried. Salary £110 per annum, with board, residence, and washing.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria Park, E.—House Physician for six months. Salary at rate of £75 per annum, with board, residence, and washing.

CITY OF WESTMINSTER UNION INFIRMARY, Fulham-road, S.W.—Second Assistant Medical Officer and Third Assistant Medical Officer. Salaries £160 and £140 per annum respectively, with board, residence, and washing.

DERBY BOROUGH ISOLATION HOSPITAL AND SANATORIUM.—Resident Medical Officer. Salary £200 per annum, with board and residence.

DERBY, DERBYSHIRE COUNTY COUNCIL.—Assistant Tuberculosis Officer. Salary £400 per annum.

DORCHESTER, DORSET COUNTY HOSPITAL.—House Surgeon, unmarried. Salary £150 per annum, with board and residence.

EDMONTON INFIRMARY.—Second Assistant Medical Officer, unmarried. Salary £160 per annum, with residential allowances.

FAREHAM, HANTS COUNTY ASYLUM.—Third Assistant Medical Officer, unmarried. Salary £250 per annum, with apartments, board, washing, and attendance.

GLOUCESTER, GLOUCESTERSHIRE ROYAL INFIRMARY AND EYE INSTITUTION.—Assistant House Surgeon for six months. Salary at rate of £80 per annum, with board, residence, and washing.

GREAT NORTHERN CENTRAL HOSPITAL, Holloway-road, N.—Resident Medical Officer. Salary £120 per annum, with board, residence, and laundry. Also House Physician and House Surgeon for six months. Salary a rate of £60 per annum, with board, residence, and laundry.

GREAT YARMOUTH HOSPITAL.—House Surgeon, unmarried. Salary £140 per annum, with board, lodging, and washing.

GREENHITHE, INGRESS ABBEY MILITARY HOSPITAL.—House Surgeon. Salary £160 per annum, with board, lodging, and laundry.

HALIFAX UNION POOR-LAW HOSPITAL, Salterhebble.—Resident Medical Officer. Salary £120 per annum, with apartments, rations, and washing.

HEREFORD COUNTY AND CITY ASYLUM.—Junior Assistant Medical Officer. Salary £200 per annum and all found except stimulants.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—House Physician for six months. Salary 30 guineas.

HUDDERSFIELD ROYAL INFIRMARY.—Senior and Junior Assistant House Surgeons. Salary £80 per annum each, with board, rooms, and washing.

LEEDS HOSPITALS FOR INFECTIOUS DISEASES AND TUBERCULOSIS.—Assistant Medical Officer, unmarried, for six months. Salary at rate of £150 per annum, with board, lodging, and washing.

LEICESTER, LEICESTERSHIRE EDUCATION COMMITTEE.—Temporary Assistant School Medical Officer. Salary at rate of £300 per annum.

LINCOLN, CITY OF.—Assistant Medical Officer of Health. Salary £250 per annum, with board and apartments.

LIVERPOOL, BOARD OF CONTROL.—Assistant Medical Officer for State Institution for Mental Defectives near Liverpool. Salary not less than £300 per annum, with unfurnished house.

LIVERPOOL UNIVERSITY.—Assistant Lecturer and Demonstrator in Anatomy. Salary £175 per annum.

LONDON HOMŒOPATHIC HOSPITAL, Great Ormond-street and Queen-square, Bloomsbury, W.C.—Assistant Physician.

MACCLESFIELD, PARKSIDE ASYLUM.—Medical Superintendent. Salary £650 per annum.

MAIDSTONE, KENT COUNTY ASYLUM.—Junior Assistant Medical Officer, unmarried. Salary £250 per annum, with board, quarters, attendance, washing, &c.

MANCHESTER CHILDREN'S HOSPITAL, Pendlebury.—Resident Medical Officer, unmarried, for six months. Salary at rate of £100 per annum.

MANCHESTER, CITY OF.—Assistant Tuberculosis Officer. Salary £350 per annum.

MANCHESTER, COUNTY ASYLUM, Prestwich.—Assistant Medical Officer, unmarried. Salary £250 per annum, with board, apartments, attendance, and washing.

MANCHESTER HOSPITAL FOR CONSUMPTION AND DISEASES OF THE THROAT AND CHEST.—Assistant Medical Officer for Crossley Sanatorium, Delamere Forest, Cheshire. Salary £100 per annum, with board, apartments, and laundry.

MANCHESTER, HULME DISPENSARY, Dale-street, Stretford-road.—House Surgeon. Salary £180 per annum, with apartments, attendance, coal, and gas.

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Park-place, Cheetham Hill-road.—House Surgeon. Salary £120 per annum, with apartments and board.

MANCHESTER ROYAL EYE HOSPITAL.—Junior House Surgeon. Salary £80 per annum, with residence, board, and washing.

MIDDLESBROUGH, NORTH ORMESBY HOSPITAL.—House Surgeon. Salary £120 per annum, with board, washing, and attendance.

MIDDLESBROUGH, NORTH RIDING INFIRMARY.—Junior House Surgeon for six months. Salary at rate of £80 per annum, with board, apartments, and laundry.

MIDDLESEX HOSPITAL, W.—Resident Medical Officer, unmarried.

METROPOLITAN HOSPITAL, Kingsland-road, N.E.—Temporary Assistant Surgeon.

MOUNT VERNON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Northwood.—House Physician. Salary £100 per annum, with board, residence, and washing.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland-street, W.—Honorary Assistant Physician for Out-patients.

NEWCASTLE-UPON-TYNE, HOSPITAL FOR SICK CHILDREN.—Senior Medical Officer. Also Junior Medical Officer. Salary £100 and £80 per annum respectively, with board, lodging, and laundry.

NEW HOSPITAL FOR WOMEN, Euston-road.—Female House Physician, Two House Surgeons, Obstetric Assistant (board, lodging, and laundry). Also Assistant Pathologist. Salary £50. All for six months.

NEWPORT (MON.). ROYAL GWENT HOSPITAL.—Resident Medical Officer. Salary for first six months at rate of £100 per annum, second six months £125, and third six months £150, with board, residence, and laundry.

NORTHAMPTON COUNTY BOROUGH.—Clinical Tuberculosis Officer (temporary). Salary £350 per annum.

NOTTINGHAM CHILDREN'S HOSPITAL.—Female House Surgeon for six months. Salary at rate of £130 per annum, with apartments, board, and washing.

NOTTINGHAM GENERAL DISPENSARY.—Resident Surgeon, unmarried. Salary £250 per annum, with apartments (not board), attendance, light, and fuel.

NOTTINGHAM GENERAL HOSPITAL.—Assistant House Surgeon for six months. Salary at rate of £100 per annum, with board, residence, and laundry. Also Senior House Physician. Salary £120 per annum, with board, residence, and laundry.

OLDHAM ROYAL INFIRMARY.—Third House Surgeon for six months. Salary at rate of £100 per annum, with board and residence.

PADDINGTON INFIRMARY 285, Harrow-road, Paddington, W.—Assistant to Medical Superintendent of Infirmary and Medical Officer of Workhouse for six months. Salary at rate of £250 per annum, with board, lodging, and washing.

PRESTON, COUNTY ASYLUM, Whittingham.—Junior Assistant Medical Officer, also Assistant Medical Officer to act also as Pathologist, unmarried. Salary commencing £250 per annum, with board, apartments, &c.

PRESTON ROYAL INFIRMARY.—Assistant Resident Medical and Surgical Officer. Salary £120 per annum, with board, residence, and laundry.

ROYAL WATERLOO HOSPITAL FOR CHILDREN AND WOMEN, S.B.—Junior Resident Medical Officer. Salary at rate of £70 per annum, with board and washing.

RYDE, ROYAL ISLE OF WIGHT COUNTY HOSPITAL.—Resident House Surgeon, unmarried. Salary £115 per annum.

ST. ALBANS, HERTS COUNTY ASYLUM, Hill End.—Second Assistant Medical Officer, unmarried. Salary £250 per annum, with board, lodging, and washing.

SALFORD ROYAL HOSPITAL.—Resident Surgical Officer and Casualty House Surgeon for six months. Salary at rate of £120 and £100 per annum respectively, with board and residence.

SALFORD UNION INFIRMARY.—Resident Assistant Medical Officer, unmarried. Salary £150 per annum, with apartments, attendance, and rations.

SHEFFIELD CITY HOSPITALS (INFECTIOUS DISEASES AND TUBERCULOSIS).—Assistant Medical Officer. Salary £180 per annum, with board, lodging, and washing.

SHEFFIELD, EAST-END BRANCH OF THE CHILDREN'S HOSPITAL.—House Surgeon. Salary £120 per annum, with board and residence.

SHEFFIELD ROYAL HOSPITAL.—Assistant House Physician, unmarried. Salary £80 per annum, with board, lodging, and washing.

SHEFFIELD ROYAL INFIRMARY.—Two House Surgeons and Assistant House Physician for six months. Salary £100 per annum each, with board and residence.

SHOREDITCH INFIRMARY, Hoxton-street, N.—Junior Assistant Medical Officer for six months. Salary £150 per annum, with board, apartments, and washing.

SOUTH SHIELDS, INGHAM INFIRMARY AND SOUTH SHIELDS AND WESTOE DISPENSARY.—Junior House Surgeon. Salary £115 per annum, with residence, board, and washing.

STIRLING DISTRICT ASYLUM, Larbert, N.B.—Female Third Assistant Medical Officer. Salary £140 per annum, with board, &c.

STOKE-ON-TRENT, INFECTIOUS DISEASES HOSPITAL, Bucknall.—Female Assistant Medical Officer. Salary £150 per annum, with apartments, board, washing, and attendance.

SUNDERLAND ROYAL INFIRMARY.—Junior House Surgeon. Salary £100 per annum, with board, residence, and laundry.

TUNBRIDGE WELLS GENERAL HOSPITAL.—House Physician, unmarried. Salary £100 per annum, with board, residence, &c.

UNIVERSITY OF LONDON.—University Chair of Anatomy at King's College. Salary £800 per annum. Also University Chair of Physiology at London Hospital Medical College. Salary £600 per annum.

WAKEFIELD, WEST RIDING ASYLUM.—Assistant Medical Officer. Salary £230 per annum, with apartments, board, washing, and attendance. Also Female Assistant Medical Officer. Salary £235 per annum. Also Locum Tenens Assistant Medical Officer. Apartments, board, travelling expenses. Salary as arranged.

WALSALL AND DISTRICT HOSPITAL.—Senior House Surgeon and Junior House Surgeon and Anæsthetist. Salary £150 and £110 per annum respectively, with board, residence, and laundry.

WANDSWORTH UNION INFIRMARY, Ouseley-road, Balham, S.W.—Second Assistant Medical Officer, unmarried. Salary at rate of £150 per annum, with board, lodging, and washing.

WEST HAM AND EASTERN GENERAL HOSPITAL, Stratford, E.—Senior House Physician. Salary £120 per annum, with board, residence, and washing.

WOMEN'S HOSPITAL FOR CHILDREN, 688, Harrow-road, W.—Female Assistant Surgeon.

WORCESTER COUNTY AND CITY ASYLUM, Powick, near Worcester.—Junior Assistant Medical Officer. Salary £200 per annum, with board, lodging, and washing.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Hounslow, in the county of Middlesex; and at Bridge of Allan, in the county of Stirling.

THE Home Secretary gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act, 1906, for the Sheriffdom of Forfar, to be attached more particularly to the Forfar District. Applications should be addressed to the Private Secretary, Scottish Office, not later than Nov. 25th.

Births, Marriages, and Deaths.

BIRTHS.

GRIFFITHS.—On Oct. 29th, at Wylcwm House, Knighton, Radnorshire, the wife of John A. K. Griffiths, M.B., of a son.

GUNN.—On Oct. 31st, at Tower Gardens-road, Tottenham, N., the wife of Andrew Rugg Gunn, M.B., Ch.B. Edin., of a daughter.

SPEIRS.—On Oct. 29th, at Old Kent-road, S.E., the wife of T. Orr Speirs, M.D. Glasg., a son.

MARRIAGES.

MENZIES—POTTER.—On Oct. 31st, at St. George's Church, Headstone, Harrow, Dr. John Louis Menzies, of Aberdeen and Croydon, to Edith May Potter, second daughter of Mr. J. I. Potter, of Harrow.

RYLE—SCULLY.—On Oct. 23rd, at St. Pancras, John Alfred Ryle, M.B., R.A.M.C., S.R., to Miriam Power, second daughter of William Charles Scully, C.C. and R.M. of Port Elizabeth.

DEATHS.

CROWTHER.—Killed in action on Oct. 13th with British Expeditionary Force, as Motor-cycle Despatch Rider, Sydney Nelson Crowther, M.R.C.S., L.R.C.P., of Netherne Asylum, Merstham, aged 39 years.

SHIELDS.—Killed in action Oct. 25th-26th, Lieutenant Hugh John Sladen Shields, R.A.M.C., Irish Guards, aged 27 years.

SYDNEY.—On Oct. 28th, Henry Sydney, M.D., of Strathclyde House, Hounslow.

TASKER-EVANS.—On Nov. 1st, suddenly, John Tasker Tasker-Evans, M.D., Upton House, Hertford, aged 71 years.

WARDLEWORTH.—On Oct. 24th, at Havre, Lieutenant Douglas Wardleworth, R.A.M.C., of St. Nicholas, Sheringham, while on active service.

WALLIS.—On Oct. 27th, at St. Minver, Leiston, Suffolk, Edward Darby Wallis, L.S.A., M.R.C.S., aged 67 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

BOOKS, ETC., RECEIVED.

ARNOLD, EDWARD, London.

The Infant: Nutrition and Management. By Eric Pritchard, M.A., M.D. Oxon., M.R.C.P. Lond., Physician to the Queen's Hospital for Children. Price 3s. 6d. net.

Mentally Defective Children. By Alfred Binet and Th. Simon, M.D. Authorised translation by W. B. Drummond, M.B., C.M., F.R.C.P. Edin. Appendix on Binet-Simon Tests by Margaret Drummond, M.A., and Introduction by Professor A. Darroch. Price 2s. 6d.

BAILLIÈRE, TINDALL, AND COX, London.

A Manual of Physiology, with Practical Exercises. By G. N. Stewart, M.A., D.Sc., M.D. Edin., D.P.H. Camb., Professor of Experimental Medicine in Western Reserve University. Seventh edition. Price 18s. net.

Syphilology and Venereal Disease. By C. F. Marshall, M.D., M.Sc., F.R.C.S. Third edition. Price 10s. 6d. net.

BALE, JOHN, SONS, AND DANIELSSON, London.

Notes on Dental Surgery and Pathology. Intended as a Ready Work of Reference for the busy Practitioner and a Note-book for Students. Interleaved with blank pages. Over 150 illustrations. By T. W. Widdowson, L.D.S. R.C.S. Eng. Price 10s. 6d. net.

BELL, G., AND SONS, LIMITED, London.

Sick-room Cookery Simplified, with Suggestions for Diet. By Mabel Baker.

Physiology and Hygiene for Girls' Schools and Colleges. By Elizabeth Sloan Chesser, M.B., Lecturer to the Institute of Hygiene. Price 2s.

BLACK, ADAM AND CHARLES, London.

Pasteur and After Pasteur. By Stephen Paget, F.R.C.S., Honorary Secretary, Research Defence Society. With 8 page illustrations. Price 3s. 6d. net.

CHURCHILL, J. AND A., London.

Dr. Chavasse's Advice to a Wife. Revised by Stanley Dodd, M.B., F.R.C.S. Sixteenth edition. Price 1s. 6d. net.

The Midwife's Companion. By Félicie Norton. Price 1s. net.

FROWDE, HENRY, AND HODDER AND STOUGHTON, London.

The Pharmacy Handbook. By F. W. Crossley-Holland, F.C.S. Price 6s. net.

GREEN, W., AND SONS, Edinburgh and London.

The Blood: A Guide to its Examination and to the Diagnosis and Treatment of its Diseases. By G. Lovell Gulland, M.A., B.Sc., M.D., F.R.C.P.E., and Alexander Goodall, M.D., F.R.C.P.E. With 28 illustrations and 16 coloured plates. Second edition. Price 15s. net.

KEGAN PAUL, TRENCH, TRÜBNER, AND CO., London, Paris, and New York.

Mediterranean Winter Resorts, with special articles on the Principal Invalid Stations by Resident English Physicians. By Eustace Reynolds-Ball, F.R.G.S. With map and diagrams. Vol. I.: South Europe. Seventh edition, revised, and in part rewritten. Price 5s. net.

LAURIE, T., WERNER, LIMITED, London.

Secrets of the German War Office. By Dr. Armgaarad Karl Graves, late Spy of the German Government. Price 2s. net.

Notes, Short Comments, and Answers to Correspondents.

During the continuance of the war the size of THE LANCET *will be curtailed. This has been necessitated primarily by the difficulty in ensuring an adequate supply of paper, but the contributions of most of our correspondents on the continent have failed, and will fail, to reach us. Many special features of* THE LANCET *have had to be sacrificed for the time, and while we ask the indulgence of our readers for this, we promise to restore them at the earliest possible opportunity.*

THE "LONDON PANEL COMMITTEE GAZETTE."

WE have received from members of the London Panel Committee copies of the first number of the *London Panel Committee Gazette*, a pamphlet of four pages, which is stated on its first page to be "circulated only to practitioners on the London panel," and which ostensibly is issued to those gentlemen by the London Panel Committee. We say "ostensibly" because, although a note on the last page intimates that communications should be addressed to the secretary of the Panel Committee, it is difficult to believe that that body, having before it a copy of the "Gazette," deliberately, and with anything like unanimity, sanctioned its publication. Regarded as an official publication it is a surprising document. A page of short paragraphs, entitled "What We Think," is composed in a style which many readers will find offensive. This is followed by observations upon "Economy in Prescribing," apparently prompted by the London Pharmaceutical Committee having asked the Panel Committee to make investigations under Article 40 of the Medical Benefit Regulations into certain cases of alleged extravagant prescribing. Allusion to this reference from the Pharmaceutical Committee is followed by various paragraphs on over-prescribing, including a statement that "a rapid scrutiny of the prescriptions suggests that a considerable portion of the charges upon the drug fund could have been avoided without loss of efficiency, and even with positive advantage to insured patients, by properly directed economy in prescribing." The charges of over-prescribing referred to the Panel Committee are grave matters for careful and judicial consideration, and if the committee has really formed an opinion after a "rapid scrutiny" of the prescriptions involved, we cannot commend the policy of making known views so arrived at. We hope, however, and indeed believe, that the Panel Committee has not either formed an opinion prematurely upon the cases in question or sanctioned any intimation to that effect, and that the observation quoted is intended to be of general rather than particular application. If so, however, it is expressed in unfortunate terms. The duty of the Panel Committee is, after hearing both sides—that of the Pharmaceutical Committee and that of the practitioners—to report to the Insurance Committee, which in its turn will deal with the cases referred upon their individual merits. Its duty, so far as particular cases are concerned, is limited to this. There should be no harm, as, we believe, will be generally agreed, in a Panel Committee making known to practitioners on the panel, as a matter of general information, its views upon over-prescribing and the principles upon which it will act in judging cases in which this is alleged. The information should, however, be contained in circulars of more dignified tone, and more in accordance with usage than the first number of the *London Panel Committee Gazette*.

SOLUROL.

To the Editor of THE LANCET.

SIR,—I would be obliged if any medical man who has used "Solurol" in the treatment of gout and rheumatism would state his experience of it in your columns.

I am, Sir, yours faithfully,

Margate, Nov. 4th, 1914. P. NEWELL.

INSURANCE AGAINST TWINS.

IN THE LANCET of March 7th, 1914, p. 727, we reported that a popular weekly paper had promised to give £5 to every mother of twins born in the United Kingdom, the Channel Islands, and the Isle of Man during the month of July, 1914, on condition that applicants sent with their application a certain number of coupons cut from weekly issues of the paper. We now learn that over 500 applications for the bounty have been received.

THE PLAGUE IN ANTIQUITY.

THE actual nature of the various plagues recorded as having occurred in antiquity seems a never-ending source of discussion. For a long time they were all regarded as identical with pestis bubonica. Recently efforts have been made to show that the plague of Athens in the time of Pericles was not plague, but typhus fever or cholera. (See THE LANCET, Oct. 17th, 1914, p. 968.) Dr. D. Fraser Harris, in a paper reprinted from the *Canadian Medical Association Journal* for July, 1914, discusses the significance of the five golden "emerods" and the five golden mice that were placed in the Ark, which, in the light of our present knowledge of bubonic plague, suggest that the plague referred to in I. Samuel vi. was bubonic plague. The word "emerods," an old form of "hæmorrhoids," occurs in several places in scripture, which suggest that it was used more or less generally for a small tumour—in this case, the buboes of plague. The mice suggest a shrewd appreciation of the connexion between the plague of mice and the subsequent epidemic disease that was characterised by the presence of buboes.

THE CENSUS OF LONDON.

ALL the varied information relating to the County of London collected at the Census of 1911 has now been brought conveniently together in the form of a separate Blue-book and presented to both Houses of Parliament. A table devoted to statistics of the occupations of the inhabitants gives the following figures under the heading of "Medical":—Physicians, surgeons, and registered practitioners, 4488 males, 147 females; dentists (including assistants), 1179 males, 56 females; midwives, 475; sick nurses and invalid attendants, 327 males, 16,126 females; subordinate medical service, 828 males, 863 females.

SELF-CURE.

A READER in the North of England sends us the following extract from the *Leeds Post* of Nov. 2nd:—

> The Self-Cure Remedy Company (Limited) have been registered as a private undertaking, with a capital of £250 in £1 shares, to deal in hygienic appliances and literature, herbal and patent medicines, to teach the principles of hygiene, &c. The subscribers are Mr. G. Hall and Miss B. Horden, both residing at Newcastle-on-Tyne.

We agree with our correspondent that the business appears to be unqualified medical practice of a not particularly blushing kind, but so long as the lady and gentleman who conduct it avoid the assumption of medical titles they are within the law—as at present constituted.

"THE LANCET" HYGIENIC TESTS FOR GAS FIRES.

IN our issue of Oct. 17th last we recorded the results of the hygienic testing of three gas fires submitted to us by the Planet Foundry Co., Limited, of Guide Bridge, near Manchester. They were quite satisfactory, but we suggested that "the maximum consumption of gas in these stoves might with advantage be increased in order to extend upwards the incandescence of the 'radiants.'" We are now informed that these fires are fitted with "a gas and air adjuster," which can be operated to suit the varying pressures and qualities of the gas supplied. This we find to be the case. A further important point about this adjuster is that it can be set so as to avoid the irritating "purr" so common to gas fires, and the result is practically a quiet fire. The principle on which this adjuster works is based upon the distribution of the gas into small parallel streams, which is effected by means of a screw-controlled plug, the periphery of which consists of a series of graduated grooves. These work in a sleeve having an internal collar of definite length. The orifices from which the gas issues can thus be enlarged or reduced as the plug is moved backward or forward. We welcome these attentions to detail, for these things do much to improve gas as a heating agent for domestic purposes.

SHRAPNEL.

THE word is on everybody's tongue, but it is not everybody who knows its origin. Henry Shrapnel, an English artillery officer, the youngest son of a family of nine children, was born on June 3rd, 1761, and entered the Royal Artillery, and visited Newfoundland, Gibraltar, and the West Indies while still a mere boy. He served also in the army of the Duke of York in Flanders, and was wounded at the siege of Dunkirk in September, 1793, and now just 121 years afterwards his invention is in great use not many miles from the very same place. He devoted all the time and money he could spare to inventions in gunnery, and his case-shot or shell was recommended by the Board of Ordnance for adoption into the service. He was afterwards employed at the Royal Arsenal at Woolwich perfecting his inventions. In 1804 his shell was employed in the attack on Surinam, and favourably reported upon, and he later received flattering testimonials as to its efficacy from the Duke of Wellington, Admiral Sir Sydney Smith, and other notable commanders.

D. T. I.—We find that no book is in existence to supply the place of Porter and Godwin's useful "Surgeon's Pocket Book." It is much to be regretted that no authority in the Army Medical Service has brought this work up to date.

J. O.—British Red Cross Society, Manchester Branch. Apply to Major J. Sington, 20, Princess-street, Manchester.

Dr. Mary Cowhy.—The address of the Medical Defence Union is 4, Trafalgar-square, London, W.C.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

THURSDAY.—Mr. W. L. Balls and Mr. F. S. Holton: Analyses of Agricultural Yield. Part I., Spacing Experiments with Egyptian Cotton (communicated by Dr. F. F. Blackman).—Mr. J. McIntosh and Mr. P. Fildes: The Fixation of Arsenic by the Brain after Intravenous Injections of Salvarsan (communicated by Prof. W. Bulloch).—Mr. A. E. Everest: The Production of Anthocyanins and Anthocyanidins, Part II. (communicated by Prof. F. Keeble).—Mr. H. M. Woodcock and Mr. G. Lapage: Living Observations on the Life-cycle of a New Flagellate-heikesimastix Fæcicola: together with Remarks on the Question of Syngamy in the Trypanosomes (communicated by Prof. S. J. Hickson).—Mr. S. W. Patterson: The Antagonistic Action of Carbon Dioxide and Adrenalin on the Heart (communicated by Prof. E. H. Starling).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

WEDNESDAY.

SECTION OF SURGERY: SUB-SECTION OF PROCTOLOGY (Hon. Secretaries—P. Lockhart Mummery, W. Sampson Handley): at 5.30 P.M.

Mr. Aslett Baldwin: (1) Case of a Woman, aged 76½, after Abdomino-perineal Excision of the Rectum; (2) Notes of a Case of Gumma of Rectum in a Woman.

Mr. Ivor Back: Notes of a Case of Œdema of the Sigmoid Mesocolon.

Mr. Sampson Handley: Case of Apparently Inoperable Carcinoma of the Rectum becoming Operable under Radium Treatment.

Paper:

Mr. P. Lockhart Mummery: Injuries to the Bowel from Shell and Bullet Wounds.

FRIDAY.

CLINICAL SECTION (Hon. Secretaries—Thomas H. Kellock, David Forsyth): at 8.30 P.M.

Clinical Cases will be shown at 8 P.M.

Paper:

Mr. W. G. Spencer: Case of Retroperitoneal Prolapse of the Spleen into the Left Loin.

HUNTERIAN SOCIETY, Barbers' Hall, Monkwell-street, E.C.

WEDNESDAY.—8.30 P.M., Council Meeting. 9 P.M., Papers:—Dr. A. Morison: Pernicious Anæmia.—Dr. A. W. Robertson: The Toxic Anæmias of General Practice.—Followed by a discussion.

SOUTH-WEST LONDON MEDICAL SOCIETY, Bolingbroke Hospital, Wandsworth Common, S.W.

WEDNESDAY—9 P.M, Mr. J. M. G. Swallson: Deformities, with Special Reference to Treatment. (Lantern Demonstration.)

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East.

TUESDAY.—5 P.M., Fitz-Patrick Lecture:—Dr. C. A. Mercier: Leper Houses and Mediæval Hospitals.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Dr. Simson: Diseases of Women. 10.30 A.M., Medical Registrar: Demonstration of Cases in Wards. 12 noon, Dr. Bernstein: Pathological Demonstration. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. D. Armour: Operations. Dr. Pritchard: Bacterial Therapy Department. Mr. B. Harman and Mr. Gibb: Diseases of the Eye.

TUESDAY.—10 A.M., Dr. Robinson: Gynæcological Operations. Dr. Owen: Demonstration of Cases in Wards. 12 noon, Mr. T. Gray: Demonstration of Fractures, &c. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women. Mr. Gibb: Diseases of the Eye.

THURSDAY.—9 A.M., Dr. Bernstein: Bacterial Therapy Department. 10.30 A.M., Dr. Simson: Gynæcological Demonstration. 12 noon, Lecture:—Dr. G. Stewart: Neurological Cases. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. D. Armour: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Robinson: Gynæcological Operations. 12.15 P.M., Lecture:—Dr. Bernstein: Applied Pathology. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10.30 A.M., Surgical Out-patient (Mr. B. Gillespie). 2.30 P.M., Medical Out-patient (Dr. T. R. Whipham); Gynæcological (Dr. J. B. Banister). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

TUESDAY.—2.30 P.M., Operations. Clinics:—Medical Out-patient (Dr. A. G. Auld); Nose, Throat, and Ear (Mr. H. D. Gillies). X Rays and Electrical Methods (Dr. Metcalfe). 3.30 P.M., Medical In-patient (Dr. A. J. Whiting).

WEDNESDAY.—Clinics:—2 P.M., Throat Operations (Mr. Gillies). 2.30 P.M., Children's Out-patient (Dr. T. R. Whipham); Skin (Dr. G. N. Meachen); Eye (Mr. R. P. Brooks). 4.30 P.M., Special Demonstration of Selected Cases of Children's Diseases (Dr. T. R. Whipham). 5.30 P.M., Eye Operations (Mr. Brooks).

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patient (Dr. A. J. Whiting); Surgical (Mr. Carson); X Rays and Electrical Methods (Dr. Metcalfe).

FRIDAY.—2.30 P.M., Operations. Clinics:—Medical Out-patient (Dr. A. G. Auld); Surgical (Mr. B. Gillespie); Eye (Mr. R. P. Brooks). 3 P.M., Medical In-patient (Dr. G. P. Chappel).

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C.

TUESDAY.—3.30 P.M., Clinical Lecture:—Dr. F. Buzzard: Disseminated Sclerosis.

FRIDAY.—3.30 P.M., Lecture:—Dr. H. Tooth: Clinical Cases.

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.

THURSDAY.—5.15 P.M., Clinical Lecture.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

TUESDAY.—3 P.M., Demonstration of Cases:—Dr. Abercrombie: Pharynx and Naso-Pharynx.

FRIDAY.—3 P.M., Lecture:—Mr. Stuart-Low: Pharynx and Naso-Pharynx.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.

TUESDAY.—6 P.M., Dr. W. K. Sibley: Electrical Treatments—X Rays, Radium, High Frequency.

THURSDAY.—6 P.M., Chesterfield Lecture:—Dr. M. Dockrell: Eczema in all its Stages.

CHADWICK PUBLIC LECTURES, Bedford College, Regent's Park, N.W.

SATURDAY.—3.0 P.M., Dr. A. T. Nankivell: Camp, Ship, and Hospital Hygiene—I., Our Soldiers' Health in Peace and War (illustrated with lantern slides).

MANCHESTER HOSPITALS POST-GRADUATE CLINICS.

THURSDAY.—ANCOATS HOSPITAL, Mill-street.—4.30 P.M., Medical and Surgical Cases.

For further particulars of the above Lectures, &c., see Advertisement Pages.

EDITORIAL NOTICES.

It is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will ensure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

THE COLONIAL AND FOREIGN EDITION (printed on thin paper) is published in time to catch the weekly Friday mails to all parts of the world.

The rates of subscriptions, post free from THE LANCET Offices, have been reduced, and are now as follows:—

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One Year	£1 1 0	One Year	£1 5 0
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(The rate for the United Kingdom will apply also to Medical Subordinates in India whose rates of pay, including allowances, is less than Rs. 50 per month.)

Subscriptions (which may commence at any time) are payable in advance. Cheques and Post Office Orders (crossed "London County and Westminster Bank, Covent Garden Branch") should be made payable to the Manager, Mr. CHARLES GOOD, THE LANCET Offices, 423, Strand, London, W.C.

TO COLONIAL AND FOREIGN SUBSCRIBERS.

SUBSCRIBERS ABROAD ARE PARTICULARLY REQUESTED TO NOTE THE RATES OF SUBSCRIPTIONS GIVEN ABOVE.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the above rates, whatever be the weight of any of the copies so supplied.

SOLE AGENTS FOR AMERICA—MESSRS. WILLIAM WOOD AND CO., 51, Fifth Avenue, New York, U.S.A.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Nov. 4th, 1914.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Oct. 29	29·440	N.E.	0·20	75	53	42	45	45	Fine
,, 30	29·454	N.E.	0·03	77	55	45	47	48	Cloudy
,, 31	29·362	S.E.	...	85	54	48	50	52	Overcast
Nov. 1	29·390	S.E.	0·01	86	57	48	47	49	Cloudy
,, 2	29·440	S.E.	0·29	63	57	48	50	51	Cloudy
,, 3	29·620	S.W.	0·20	92	59	51	51	51	Raining
,, 4	29·772	N.E.	...	70	56	48	49	49	Foggy

The following magazines, journals, &c., have been received:—Canadian Medical Association Journal, Canadian Practitioner, Ophthalmoscope, American Journal of Orthopedic Surgery, Indian Medical Journal, St. Thomas's Hospital Gazette, American Journal of Tropical Diseases, Dominion Medical Monthly, Practitioner, British Dental Journal, British Review, Duodecim, South African Medical Record.

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